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**THE AMERICAN
YEAR BOOK**

THE AMERICAN YEAR BOOK

A Record of Events and Progress

YEAR 1931

EDITOR

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PREFACE


What is the significance of the successive annual volumes of *THE AMERICAN YEAR BOOK*? First of all the book deals with the great lines of activity and development, those that are a part of the machinery and application of government; but government is inextricably connected with private and corporate affairs, the regulation of which is a significant part of modern government. Both public and private enterprise are dependent on the numbers and conditions and combinations of the individual members of the community. Public welfare and individual welfare are closely connected with science, that is with the coördination, classification, and enlargement of knowledge of the physical world and the conditions of human life. To prepare to solve the problems of government, of economic organization and of society, knowledge of what men have previously done and thought, and the means of enlarging and circulating knowledge, are essential, in literature, art and education.

These activities of mankind change from year to year. Each year as well as each generation is built upon what has gone before. Hence the *YEAR BOOK* is intended to be a condensed record, not simply of facts and occurrences and discoveries, but of the advance made annually in physical, intellectual and scientific organization.

The principle of selection adopted for this volume as for all previous volumes has been to ask for contributions from experts, many of them identified with a national society or institution. A supervisory board composed of 46 representatives of as many national learned societies, takes the responsibility for publication of the *YEAR BOOK*. The expectation is that this system of responsible editing will secure coöperation of the best brains of the nation in recording the swift progress of a single year within the several fields, as experts upon each subject.

As in previous years, the *YEAR BOOK* for 1931 is devoted to the progress of America, with such attention to foreign events and developments as may make clearer what is going on in the United States. The sciences and the several aspects of political and economic progress must include some survey of what is going on in the world at large as well as in the United States. Realizing that progress in many fields is recorded fully in the transactions and publications of learned societies and research institutions, each of the twenty-seven sections includes a brief list of references to cognate societies which record, publish and distribute more detailed information and discussion.

THE AMERICAN YEAR BOOK in its present form has been made possible by the public spirit of Mr. Adolph S. Ochs of *The New York Times*, whose name is connected with a variety of services to the American public, and who desires through the *YEAR BOOK* to aid in bringing the complicated phenomena of modern social, political and economic life down to a condensed form which may be helpful to active minds in all the fields of human effort.



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TABLE OF CONTENTS

PREFACE	v
CONSTITUENT SOCIETIES AND SUPERVISORY BOARD	xi
CONTRIBUTORS	xv

PART ONE: HISTORICAL

DIVISION	PAGE
I. AMERICAN POLITICAL HISTORY	1
Congress and Its Functions.—Significant Federal Legislation.—The President and His Policies.—National Personalities.—Federal Administrative Commissions.—The War Debt Moratorium.—The Prohibition Controversy.—The Elections of 1931.—The George Washington Bicentennial.	
II. INTERNATIONAL SITUATIONS AFFECTING THE UNITED STATES	38
The United States Foreign Service.—United States Treaties.—The United States and World Affairs.—Latin-American Relations.—Oriental and Near Eastern Relations.—The Austro-German Customs Union Discussion.—Franco-Italian Naval Discussions.—International Conferences.—America and the League of Nations, World Court and International Labor Office.—The Institute of Politics.—The Institute of Pacific Relations.	

PART TWO: AMERICAN GOVERNMENT

III. THE NATIONAL GOVERNMENT	82
Personnel of Congress, 1931-32.—Members of the Senate and House of Representatives.—Personnel of the Administration.—Federal Administrative Organization.—Federal Civil Service.—Personnel of the Judiciary.—Federal Judicial Prosecutions and Decisions.	
IV. STATE GOVERNMENT	115
National and Interstate Relations of States.—State Constitutions, Referenda and Initiatives.—Electoral Legislation.—Law Reform.—State Administration and Judiciary.—County and Rural Government.	
V. MUNICIPAL GOVERNMENT	131
City Politics.—Types of Municipal Government.—Municipal Functions.—Municipal Miscellanies.—City Planning.—Zoning.	
VI. TERRITORIES AND SPHERES OF INFLUENCE	151
Alaska and Hawaii.—Porto Rico.—Philippine Islands.—Virgin Islands.—Guam and American Samoa.—District of Columbia.—Spheres of American Influence.	

PART THREE: GOVERNMENTAL FUNCTIONS

VII. PUBLIC FINANCE AND TAXATION	172
National Expenditures and Revenues.—The National Budget.—The Public Debt of the United States.—State	

TABLE OF CONTENTS

DIVISION

PAGE

Finance.—City Finance.—Tax Legislation.—Income Taxes.
—Land and Property Taxes.—Corporation and Bank Taxes.
—Inheritance Taxes.—Automobile and License Taxes.

VIII. PUBLIC RESOURCES AND UTILITIES 216

Federal Surveys and Maps.—State Geological Surveys.—
Reclamation and Irrigation.—Public Lands.—Public Service
Commissions.—Municipal Ownership of Utilities.—Public
Ownership of Water Power.—Water Supply.—Street and
Highway Traffic Regulation.—Waterways and Harbors (See
also Division IX).—Electric Lighting and Power.

IX. DEFENSE AND ARMAMENTS 252

Military Problems of the United States.—Organization of
the Army.—Accomplishment of Army Personnel.—Army
Aeronautics.—Military Education.—Administration of Vet-
erans Affairs.—Waterways and Harbors (See also Division
VIII).—Organization of the Navy.—Functions of the Navy.
—Naval Construction and Equipment.—Naval Aeronautics.
—Naval Education.

PART FOUR: ECONOMICS AND BUSINESS

X. BUSINESS AND FINANCE 306

Economic and Business Conditions.—The Security and
Money Markets.—Volume of Banking Transactions.—For-
eign Trade.—Railroad Traffic and Earnings.—Control of
Production.—Foreign Tariffs and Trade Controls.—Govern-
mental Regulation of Commodity Exchanges.—Public Pro-
tection of Securities.—Investment Trusts.—Banking Affairs.
—Trust Banking.—The Federal Reserve System.—Banks
and Trust Companies.—Foreign Exchange.—Life Insurance.
—Fire Insurance.—Marine Insurance.—Casualty and Mis-
cellaneous Insurance.—Financial Chronology.

XI. AGRICULTURE AND ALLIED INDUSTRIES 395

Conditions of Agriculture.—Agricultural Legislation.—Cotton
and Grain Crops.—Livestock and Meats.—Dairying.—Dis-
eases and Pests of Animals.—Diseases of Plants.—Pests of
Plants.—Agricultural Marketing.—Horticulture.—Forestry.—
Fisheries.

XII. MINERAL INDUSTRIES 430

Mining and Ore Dressing.—Coal and Coke.—Petroleum.—
Iron and Steel.—Copper.—Gold and Silver.—Zinc.—Lead.

XIII. MANUFACTURES AND TRANSPORTATION 451

Conditions in Manufacturing.—Administration of the Tariff.
—The United States Tariff Commission.—The Export and
Import Balance.—Conditions of Internal Commerce.—Rail-
roads.—Highways and Motor Roads.—Motor Bus Service.—
Community Transit.—The Merchant Marine.—Progress in
Aeronautics.—The Radio.—Manufacturing Statistics.

PART FIVE: SOCIAL CONDITIONS AND AIMS

XIV. IMMIGRATION AND POPULATION 508

Race Conditions in the United States.—Immigration Prob-

TABLE OF CONTENTS

DIVISION	PAGE
lems.—Citizenship and Naturalization.—Population Statistics.	
XV. SOCIAL PROBLEMS AND CONDITIONS	532
Crime Conditions in the United States.—Prisons and Penal Conditions.—Preventive Work in Delinquency.—Socialism.—Organized Social Work.—Housing Problems.—Social Hygiene.—Mental Hygiene.—Child Welfare.	
XVI. LABOR AND LABOR LEGISLATION	565
Labor Conditions and Organizations.—Labor Legislation.—Labor in Politics.—Employment Conditions.—Mediation and Arbitration in Industrial Disputes.—Child Labor.—Workmen's Compensation and Insurance.	
XVII. RELIGION AND RELIGIOUS ORGANIZATIONS	586
Protestant Church Activities.—Interdenominational Activities.—The Roman Catholic Church.—The Oriental Orthodox Church.—Judaism and Jewish Communal Affairs.	
PART SIX: SCIENCE—PRINCIPLES AND APPLICATION	
XVIII. MATHEMATICS AND ASTRONOMY	613
Research in Mathematics.—Mathematical Publications and Meetings.—Mathematics in Chemistry.—Astronomical Societies.—Observatories.—Clocks.—Moon.—Eros.—Pluto.—Comets.—Sun.—Rotating Stars.—Depths of Space.—Publications.	
XIX. ENGINEERING AND CONSTRUCTION	625
Structural Engineering.—Mechanical Engineering.—Electrical Engineering.—Automotive Engineering.—Naval Architecture and Marine Engineering.—Commercial Marine Engineering.—Materials of Engineering and Construction.—Commercial Aviation.—American Machinery.	
XX. GEOPHYSICAL SCIENCES	685
Dynamic and Structural Geology.—Earthquakes and Volcanoes.—Mineralogy and Petrography.—Terrestrial Magnetism.—Meteorology and Climatology.—Oceanography.—American Exploration.—Cartography.	
XXI. CHEMISTRY AND PHYSICS	707
Inorganic and Physical Chemistry.—Organic Chemistry.—Agricultural Chemistry.—Electrochemistry.—Industrial Chemistry and Chemical Engineering.—Physics.	
XXII. BIOLOGICAL SCIENCES	730
Organic Evolution.—Vertebrate Zoölogy.—Invertebrate Zoology.—Vertebrate Paleontology.—Botany.—Economic Botany.—Entomology.	
XXIII. MEDICAL SCIENCES	756
Physiology.—Pathology.—Medicine.—Pharmacology.—Surgery.—Dentistry.—Public Health and Hygiene.—Vital Statistics.	

TABLE OF CONTENTS

DIVISION

PAGE

XXIV. PHILOSOPHICAL SCIENCES	778
Philosophy.—Psychology.—Sociology.—Anthropology and Ethnology.—Mental Tests.	

PART SEVEN: THE HUMANITIES

XXV. LITERATURE AND LANGUAGE	802
History.—Biography.—Travel.—Fiction.—Poetry.—Criticism and Belles Lettres.—English Language and Literature.— Germanic Languages and Literature.—Romance Languages and Literature.—Latin Literature.—Greek Literature.— Semitic Languages and Literature.—Indo-European Lin- guistics.—Libraries.	
XXVI. THE ARTS	843
Archaeological Discovery.—Painting.—Sculpture.—Architec- ture.—Music and the Opera.—The Theatre.—Motion Pic- tures.—Museums of Science and Industry.	
XXVII. EDUCATION	874
Elementary Education.—Secondary Education.—Collegiate Education.—Education for the Professions.—Democracy of the High School.—Development of Trade and Industrial Education.—Vocational Education in an Industrial Center. —Home-Making Education.—Vocational Education and Un- employment in Wisconsin.—Future Farmers of America.— Adult Education.—Pure Research in Educational Institu- tions.	
INDEX	911

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THE AMERICAN
YEAR BOOK

THE AMERICAN YEAR BOOK

A RECORD OF EVENTS AND PROGRESS

PART ONE HISTORICAL

DIVISION I AMERICAN POLITICAL HISTORY

CONGRESS AND ITS FUNCTIONS

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CONTROVERSIES IN SEVENTY- FIRST CONGRESS

Congress reconvened Jan. 5, 1931, after the holiday recess, faced by highly controversial questions; on most of the issues the fight was between the President and the Republican House leaders, on the one side, and the Democratic leaders and Insurgent Republicans, on the other. Three of the major issues,—relief for drought sufferers, the remedies for unemployment, and aid for World War veterans—arose out of difficulties made acute by the depression.

DROUGHT RELIEF

Just before the recess the two Houses had reached a tentative compromise, adopting a measure authorizing an appropriation of \$45,000,000 (half-way between the original House and Senate figures) to be expended by the Secretary of Agriculture for loans for "purposes incident to crop

production." On the first day of the January sitting the House adopted a joint resolution appropriating the indicated amount. The Senate the same day adopted the resolution after adding an amendment, introduced by Sen. Caraway, appropriating \$25,000,000 to be used for loans for food for human beings. This threw the measure into conference. The Republican House leaders, the Secretary of Agriculture, and Chairman Payne of the Red Cross joined in assurances that the latter organization could meet all the needs for human consumption. When the Senate conferees reported the hopelessness of all efforts to exact any concession from the House, the Senate, after bitter denunciations of the Administration, adopted by *viva voce* vote the appropriation in the House form; and the measure was promptly signed by the President, Jan. 15.

This did not interrupt the fight,

I. AMERICAN POLITICAL HISTORY

however. On the following day Senator Robinson introduced an amendment to the Interior Department Appropriation Bill, adding \$25,000,000 "to be expended by the American National Red Cross for the purpose of supplying food to persons otherwise unable to procure the same." Three days later the Senate adopted this amendment by vote of 56 (35 D, 20 R, 1 F. L.) to 27 (all R). Meanwhile the Red Cross had entered upon a campaign for private subscriptions to a fund of \$10,000,000. After the adoption of the Robinson proposal by the Senate, Chairman Payne startled the country by announcing that the Red Cross would refuse to administer any fund appropriated by Congress. Following the decisive defeat of the Robinson proposal in the House, the 42 Democratic Senators joined in a public statement that the \$25,000,000 must be adopted or an extra session convened. Meanwhile, however, both groups, fearing responsibility for an extra session, sought terms of compromise. Announcement was made of an agreement between Democratic and Republican leaders of the Senate, to appropriate \$20,000,000 to be loaned, on security, for crop production and "further agricultural rehabilitation." Although this compromise was accepted by the Senate and House conferees, it met with bitter opposition from Insurgents and some of the Democrats in the Senate, who objected particularly to the discretion left to Secretary Hyde as to the meaning of "rehabilitation," and to the limitation of loans to those who could supply security. After the President and Secretary Hyde had issued statements which, though vaguely conciliatory, appeared to be studied attempts to avoid explicit acknowledgment of any intention to expend the funds, under any conditions, for direct human needs, the Senate, on Feb. 11, adopted a resolution, introduced by Sen. Borah, calling upon the Secretary to state whether the terms of the appropriation would allow use of the fund for food, clothing and medicine. The Secretary replied on the following day, by telegram from Ken-

tucky, that while he considered the major purpose of the appropriation was not to provide for such purposes, yet "where loans . . . are made to those who have the securities indicated . . . there could be no prohibition against the proceeds of such loans being used for food or other supplies if they are necessary to effect the purpose" of the appropriation, namely, "restoring a weakened credit situation." This negative and restricted admission of supplies for human needs into the purposes of the measure appeared to be the best that the persistent attack of Democrats and Insurgents could extract from the Administration. The deadlock, which for seven weeks had threatened an extra session, was finally ended by the passage of the Interior Department Bill carrying the \$20,000,000 appropriation in the compromise form, the House voting *viva voce*, the Senate by vote of 67 (36 R, 31 D) to 15 (8 R, 6 D, 1 F. L.), with six other Senate Insurgents paired against the bill. The Republican Senate leaders had offered little in the way of defense of the policy of the Administration in the controversy; although they probably played a somewhat important part in the consultations and negotiations leading to the compromise. The struggle had been unnecessarily prolonged and embittered by a disposition on each side to see on the other side an intention to "play politics with human misery."

RELIEF OF UNEMPLOYMENT

Sen. Wagner, New York, who in the long session had worked actively for legislation along this line, renewed his efforts in the short session, which met with only partial success. His measure for the advance planning and regulated construction of public works, which had passed the Senate in April, 1930, and rested in a House committee at adjournment, finally passed the House on Feb. 2 and was signed by the President, Feb. 10. His measure (S. 3060) for a federally-aided system of employment exchanges, also passed by the Senate in the preceding session, was reported

CONGRESS AND ITS FUNCTIONS

to the House, Feb. 19. This measure provided for a United States Employment Service to be set up in the Department of Labor, whose function it would be to cooperate in maintaining state agencies, coordinate employment services throughout the country, and administer conditional grants in aid to the states, apportioned on a 50-50 basis; the measure also authorized the new Federal body (within a limited period of three years) to establish agencies of its own in states having no employment services. While this was before the House, Secretary of Labor Doak sent to the Judiciary Committee a bill which he asked to have substituted for the Wagner measure. The Doak bill also provided for Federal cooperation with state agencies, but omitted any provision for conditional subsidies or for direct Federal administration in inactive states; it was favorably reported by the Committee, and moved as an amendment to the Wagner measure, but was rejected by the House by vote of 182 to 84. The House, on Feb. 23 passed without record vote the Wagner measure, with minor amendments with which the Senate concurred. The bill was killed by pocket veto. On March 7, the President issued a statement of the grounds for his veto: the measure would abolish "the whole of the present well-developed Federal employment service," and "the entirely new plan" could not be made effective "for many months or even years"; it apportioned Federal aid among the states on the basis of population rather than need; and existing Federal services were meeting immediate needs. The measure had received almost unanimous support from the leaders of organized labor and social welfare workers, and had been commended by many academic economists and some business men; and there was widespread criticism of the veto. Particular exception was taken to the President's assertions that existing measures were meeting the needs and that to set up the proposed new machinery would involve serious delay and confusion.

AID FOR VETERANS

Some two score measures to aid veterans of the World War were introduced at the beginning of the session, most of them providing for some sort of immediate cash allowance on the adjusted-compensation certificates. Secretary Mellon, widely supported by bankers and business men, opposed the measures, on the grounds of the inability of the government to float, on reasonable terms, the necessary bond issues to raise the funds. On the issue a prevailing number of House Republicans forsook the Administration. Representative Bacharach, conservative Republican of New Jersey, drafted a measure providing for a more than doubling of the loan values of the certificates and for reducing the interest rates. The measure was supported by Speaker Longworth and Chairman Snell of the Rules Committee and passed the Ways and Means Committee by vote of 17 to 4, and was adopted by the House on Feb. 16 under suspension of the rules by vote of 363 (212 R, 150 D, 1 F. L.) to 39 (all R). Two days later the measure passed the Senate by vote of 72 (34 R, 37 D, 1 F. L.) to 12 (all regular Republicans, except Borah). President Hoover returned the measure with his veto, on Feb. 26. His message repeated the well-known objections: the enormous cash outlay—potential \$1,700,000,000, and expected \$1,000,000,000; the relatively small number of veterans in actual need; the vitiating effects on habits of self-reliance, for those not in need. With less than one-hour's debate the House repassed the measure, on the same day, by vote of 328 to 79; and the Senate did likewise on the following day, following three hours of debate, by vote of 76 to 17.

MUSCLE SHOALS

The ten-year wrangle over the issue of public versus private operation of the \$150,000,000 project engrossed the attention of Congress again. The two houses for a second time reached an agreement, again made futile by a Presidential veto. Sen. Norris' measure (S. J. Res. 49), as modified

I. AMERICAN POLITICAL HISTORY

in the agreement between House and Senate conferees Feb. 18, provided for governmental operation of the power plants and for conditional lease of the fertilizer plants to private interests, the lease to be made within one year, failing which the government corporation must itself operate these plants also. The measure then passed the House Feb. 20, by vote of 216 to 153, and the Senate Feb. 23, by vote of 55 (20 R, 34 D, 1 F. L.) to 28 (26 R, 2 D). On Feb. 28 the President issued a public statement, belittling the importance of the power plants and decrying the amount of time Congress was giving to the matter. On March 3 he returned the measure with his veto message. His objections were both philosophical and practical. The former set forth the familiar dogmas against breaking down "the initiative and enterprise of the American people." The latter,—"the cold examination of engineering facts" promised in his earlier statement—pointed to the time limit and other conditions of the lease of the nitrate plants, which conditions, he contended, would make it impossible to find a responsible lessee, (2) the impossibility of finding worthy members of the government board, because of the measure's requirement that they hold a "belief in the feasibility and wisdom of producing fixed nitrates for sale to farmers," (3) the measure's inadequate estimate of expenses and income in the operation of the power plants, (4) the enormous and unknown expenses that would be required for modernizing the nitrate plants in order to render them available in the profitable production of fertilizers. He recommended that Congress give full authority to a commission, composed of representatives of the States of Alabama and Tennessee, of national farm organizations, and of the Corps of Army Engineers, to "lease the plant at Muscle Shoals in the interest of the local community and agriculture generally." In the reconsideration by the Senate on March 3, the measure failed to receive the required two-thirds majority, the vote being 49

(16 R, 32 D, 1 F. L.) to 34 (31 R, 3 D).

"LAME-DUCK" AMENDMENT

For the first time the House accepted a proposal for a constitutional amendment to put an end to the present arrangement under which one of the sessions of a Congress, chosen over two years earlier, follows one month after the election of a new Congress. Sen. Norris' proposal for such an amendment had in the preceding session passed the Senate for the fifth time and died in a House committee. His latest resolution (S. J. Res. 3) provided for bringing terms and sessions together by fixing Jan. 4 for the beginning of terms of Senators and Representatives and the sessions of Congress, and Jan. 15 as the beginning of the Presidential term. The House on Feb. 24 adopted an amendment (to a resolution introduced by Representative Gifford, and identical with the Norris resolution) proposed by Speaker Longworth, providing that in the even-numbered years the session should terminate on May 4, to prevent, the Speaker argued, the possibility of Congress being perpetually in session. The House adopted the Longworth amendment by vote of 230 (175 R, 55 D) to 148 (60 R, 87 D, 1 F. L.), and then adopted the amended resolution by vote of 289 (158 R, 130 D, 1 F. L.) to 93 (80 R, 13 D). The resolution died in conference: the House conferees refused to go beyond extending the second session to June 1, and the Senate conferees insisted upon an unlimited session, which they held to be necessary to avoid session-end filibusters.

COMMITTEE INQUIRIES

Lucas Investigation.—The Senate Campaign Funds Committee, known as the "Nye Committee" investigated the activities of Robert H. Lucas, Executive Director of the Republican National Committee, in reference particularly to his efforts, in the 1930 election in Nebraska, to prevent the reelection of Sen. Norris, Republican candidate. On Feb. 28 the Committee reported to the Sen-

CONGRESS AND ITS FUNCTIONS

ate. It accused Lucas of wilful violation of the Corrupt Practices Act, in secretly spending \$4,000 (Lucas had testified that this was his own money, obtained by a personal loan secured by funds of the Republican National Committee) in the anti-Norris campaign, and in failing to report the expenditures in the time prescribed by law; it also charged Lucas with an attempt to secure the defeat of Norris "by fair means or foul" in setting up a dummy candidate of the same name (in the primary) and in distributing fictitious letters and cartoons defaming Sen. Norris.

Communist Probe.—On Jan. 17, the Special Committee on Communistic Activities created by the House of Representatives in the previous session and headed by Representative Hamilton Fish of New York, submitted a voluminous report (H. Rept. 2290), embodying their conclusions and recommendations on the basis of an eight-months investigation. The report recommended: prompt legislation by Congress to cancel the naturalization of members of the Communist Party, prevent further naturalization of Communists, deport alien Communists, and bar Communist publications from the mails; investigation by the Treasury Department of the use of convict or other forced labor in Russia in the production of goods exported to the United States; consideration by Congress of a complete embargo on Russian manganese. No action was taken on the recommendations.

Post Office Leases.—The Senate Select Committee on Post Office Leases created in December, 1930, and headed by Sen. Blaine of Wisconsin, made an extended inquiry into the lease of property for the post office in St. Paul, Minn. Testimony disclosed that a lease requiring payment by the Government of \$120,000 annually on property assessed at \$344,000, was re-written in 1925, with the addition of a non-cancellable clause; that in the latter arrangement James W. Good (formerly a leading Republican member of the House of Representatives, later

Western manager for the Republicans in the 1928 campaign) had acted as attorney for the lessee; that in March, 1928, a Federal grand jury was impanelled to investigate charges of corruption and fraud in connection with the lease; that subsequently, the grand jury investigation was terminated at the suggestion of Postmaster-General New. The latter himself testified that the addition of the non-cancellable clause had been made with his approval, after consultation with Mr. Good, "in the interest of good business."

END OF SEVENTY-FIRST CONGRESS

Filibuster.—The Senate session ended in the midst of a one-man filibuster, by Sen. Thomas of Oklahoma, a gesture in his fight for independent oil producers. In retaliation for his failure to obtain consideration of his motion for appointment of a committee to investigate the industry, he held the floor on the last day, from the hour of convening, at 9 a. m., until the Vice-president's announcement of adjournment at noon.

Measures Failing of Enactment.

—Of the bills which, having passed the House, failed to receive final Senate vote, the following are important; the Maternity Aid Bill (S. 255) renewing the law for Federal grants and for cooperation between the Federal Government and the states in infancy and maternity care; the Vestal Copyright bill (H.R. 12549), extending copyright protection by providing for automatic copyright before publication of literary, musical and artistic compositions, and for United States adherence to the International Copyright Convention; the Capper-Kelly-Capper re-sale-price bill (H.R. 11) aimed at chain stores; a bill (H.R. 10288) for the regulation of interstate motor buses; a bill (H.R. 16517) to exclude the importation of products of forced labor in Russia and a resolution (H.J. Res. 500) providing for a 10 per cent reduction in immigration, for a two-year period. Bills failing to pass either house included the following; the Howell Bill

I. AMERICAN POLITICAL HISTORY

for a more drastic enforcement of prohibition in the District of Columbia (S. 3344); the Britten House Bill appropriating \$74,000,000 and the Hare Senate Bill appropriating \$90,000,000 for new construction to bring the navy up to the limits allowed by the London treaty; a Senate bill (S. 3822) for Philippine independence. Presidential vetoes defeated 11 measures, the most important being the Muscle Shoals resolution and the Wagner Bill for a Federally aided system of employment exchanges. There were in all 12 vetoes for the session. Five were pocket vetoes, including the Wagner measure and five minor measures. The seven measures vetoed and returned including the Muscle Shoals resolution, the measure for increased veterans' loan (see p. 3) and five minor measures. All the vetoes were sustained, with the exception of the veterans' loan.

SEVENTY-SECOND CONGRESS, FIRST SESSION

Membership and Organization.—

In the preceding Congress the Republicans held a majority of 100; in the Senate there were 53 Republicans, (including the Insurgents), 42 Democrats, and one Farmer-labor member. The general election of 1930 resulted in the return of 218 Republicans, 216 Democrats and one Farmer-labor member to the House, and of 48 Republicans, 47 Democrats and one Farmer-labor member to the Senate. These narrow margins and the uncertainty as to the stand of Republican Insurgents in the Senate left the question of control of the 72d Congress in great doubt until the eve of the first session. In the thirteen-months interval between the 1930 election and the assembling of the 72d Congress, an unprecedented number, of 14 vacancies in the House had been caused by death, equally divided between districts held by Republicans and by Democrats. Elections to 13 of the vacancies (six at special elections before the November election, five at the latter election, and two in the remaining interval before the assembling of Con-

gress) resulted in a net gain of six for the Democrats (by a change from Republican to Democrat in the 9th Michigan, the 14th Texas and the 5th New Jersey districts) so that the distribution stood at the opening of the session, 219 Democrats, 214 Republicans, 1 Farmer-labor member, and one vacancy (the first New Hampshire, to be filled Jan. 5, normally Republican but in doubt because of the Democratic swing). The Democrats were in a majority in the House for the first time in 12 years.

Soon after the death of Speaker Longworth on April 9 there developed a competition among Republicans for the speakership nomination, with a sharp contest between the two surviving members of the triumvirate, Longworth, Tilson and Snell, that had ruled the House in the last session. In a spirited caucus on Nov. 30, Representative Snell of New York, chairman of the Rules committee of the House in the two preceding Congresses, was nominated at the end of the seventh ballot, after driving forward from four votes behind Tilson on the first ballot to within a single vote of a majority on the seventh.

The Democratic caucus on December 5, with only one absentee, unanimously nominated John Nance Garner, Texas, floor leader in the preceding Congress, for Speaker, and Henry Rainey, Illinois for floor leader. The caucus also succeeded, through compromise between Tammany and the South, in distributing the committee chairmanships without dissension. Within an hour after the opening of Congress on the next day, Mr. Garner was elected Speaker by a plurality of 11 and a majority of 6 the vote being Garner 218, Snell 207, Schneider, Insurgent Republican of Wisconsin, 6. On the afternoon of the same day the Republican caucus chose Snell as minority floor leader; Tilson, having, in the interest of party harmony, resigned the Republican floor leadership which he had held since 1925.

Party distribution in the Senate remained unchanged since the 1930 election, vacancies caused by death

CONGRESS AND ITS FUNCTIONS

having resulted in no party changes. Contests were pending in connection with the seats of Sen. Bankhead (D, Ala.), contested by former Sen. Heflin, who, defeated in the Democratic primary, had run as an independent in the 1930 election, and Sen. Josiah W. Bailey (D, N.C.), contested by Geo. M. Pritchard, Republican candidate in the 1930 election. Senators James E. Watson (Ind.) and Joseph T. Robinson (Ark.) continued to be floor leaders of the Republican and Democrats, respectively. The long-threatened war by Insurgent Republicans against Senator Moses (N.H.), appeared in the balloting for President *pro tempore*. On all the ballots the Democrats voted solidly for Senator Pittman (Nev.), who on most of the ballots was within two votes of a majority, Sen. Moses being generally a dozen votes short; the Insurgents (with the exceptions of Brookhart, Johnson and Norbeck, who supported Moses) voted generally for Norris or others of their group, switching their vote on one ballot to Sen. Hebert, Republican regular, in order apparently to indicate their readiness to support any Republican other than Moses. The deadlock remained unbroken at the beginning of the holiday recess, and Senator Moses continued to hold the office by default.

Rules Liberalization in the House.—Democrats and Insurgents had for several sessions demanded a liberalization of the rules for getting a measure on the floor for debate and vote. Under the existing rules a measure in the hands of a committee or on the calendar as placed by the Rules Committee could be brought to the floor only by action of the Rules Committee or on petition signed by a majority of the members. There were various demands to fix the number at lower figures, between 100 and 150. After the 1930 elections, the Republican leaders who had previously resisted all suggestions for change, were forced to promise to consider a change in the next Congress. At the opening of the 72d Congress both Democratic and Republican caucuses adopted pro-

posals for amending the rules to substitute 145 for 218 as the number of signers sufficient to require the House to vote on the question of discharging a committee from further consideration of a measure referred to it 30 days prior thereto. The two plans differed only in minor details. The vote in the House, on Dec. 8, was 227 to 194 in favor of the Democratic plan, the 7 Wisconsin Republicans, the North Dakota Representative and the Farmer-labor member voting with the solid Democratic group. The new rule was then adopted by vote of 402 to 7.

Reconstruction Finance Corporation.—The Ways and Means Committee began consideration and hearings on a measure designed to carry out the most important recommendation of President Hoover for general improvement of the credit situation. The measure provided for the creation of a corporation, along the lines of the War Finance Corporation, operating with a capital of \$500,000,000 provided by the Government, and allowed to issue \$1,500,000 in debentures guaranteed by the Government, for the purpose of making loans to banks, railroads, agricultural industries and other businesses where the necessary credits cannot be obtained through the ordinary credit facilities.

Prohibition.—At the beginning of the first session of the 72d Congress the Association against the Prohibition Amendment listed 31 Senators and 185 members of the House as in favor of repeal or revision of the 18th Amendment, an increase, since 1928, of 13 Senators and 108 Representatives. On Dec. 16 a Republican wet bloc of members of the House was organized, with Representative Beck of Pennsylvania as chairman and Representative LaGuardia of New York as secretary. This bloc agreed to seek votes in Congress for a modification of the Prohibition Act, so as to permit 2.75 per cent beer, and for a referendum on the 18th Amendment, and to attempt to bring the issue before the Republican National Convention in June.

I. AMERICAN POLITICAL HISTORY

SIGNIFICANT FEDERAL LEGISLATION

By F. W. COKER

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EMERGENCY RELIEF

Loans for Crop Production.—A joint resolution (S. J. Res., Pub., No. 211, approved Dec. 20, 1930) authorized the Secretary of Agriculture to make loans to farmers in the drought- and storm-stricken areas for purchase of seed, fertilizer, feed for stock, fuel and oil for tractors, and for such other purposes incident to crop production as he may prescribe. The act authorized the appropriation of \$45,000,000 for the purposes indicated.

Rider to the Interior Department Appropriation Act.—(H. R. 14675, Pub., No. 666, approved Feb. 14). This rider appropriated \$20,000,000 "to be immediately available" for use by the Secretary of Agriculture in the drought- and storm-stricken areas for loans to assist in forming and maintaining local agricultural-credit corporations, livestock loan companies, and like organizations, and for loans to farmers "for crop production for the crop of 1931 and for further rehabilitation"; the loans to be "secured by liens on crops or by other security, under such rules and regulations as the Secretary of Agriculture may prescribe."

Emergency Construction.—An act (H. R. 14804, Pub., No. 550, approved Dec. 20, 1930) providing for appropriations, totalling \$116,000,000, "for emergency construction on certain public works,"—roads, river and harbor improvements, flood control—during the remainder of the fiscal year 1931, "with a view to increasing employment."

Enlargement of Building Program.—(H. R. 16297, Pub. No. 671, approved Feb. 16). A measure increased by \$100,000,000 the amounts already authorized for public buildings outside the District of Columbia, and raised the amount that may be expended in any one year in any state, territory or possession, from

\$10,000,000 to \$20,000,000, until Dec. 31, 1933, and thereafter to \$15,000,000. The act also provides that when the lowest bid exceeds the amount available under the estimated limits of cost fixed by Congress, the Secretary of the Treasury is authorized to enter into a contract for the construction of such buildings in an amount not exceeding in excess of such limit.

Additional Funds for Farm Board.—The funds to be administered by the Federal Farm Board, under the "Agricultural Marketing Act of 1929", were added to by a special appropriation of \$150,000,000 (H. R. 1359, Pub., No. 551, approved Dec. 22, 1930) and an appropriation of \$100,000,000 in the Independent Offices Appropriation Act, 1932 (H. R. 16415, Pub., No. 720, approved Feb. 23).

Emergency Adjusted Compensation Act, 1931.—This act (H. R. 17054, Pub., No. 743, passed over the President's veto, in the House, Feb. 26, Senate, Feb. 27) amended the World War Adjusted-Compensation Act, 1929, so as to raise the loan values of the certificates from 22½ per cent to 50 per cent of the face values, and reduce the interest rate from 6 per cent to 4½ per cent.

EMPLOYMENT AND LABOR

Wagner Act for Advance Planning of Public Works.—The Employment Stabilization Act of 1931 (S. 5776, Pub., No. 616, approved Feb. 10) creates a Federal Employment Stabilization Board composed of the Secretaries of the Treasury, Commerce, Agriculture, and Labor. The chief duties of the board are: (1) to advise the President on the trend of employment and business activity and of the existence or approach of periods of business depression or unemployment; (2) to cooperate with construction agencies in

SIGNIFICANT FEDERAL LEGISLATION

formulating methods of advance planning. The act provides that whenever, on the recommendation of the Board, the President finds that there exists in any substantial portion of the United States a period of business depression or unemployment, he is requested to transmit to Congress such supplementary estimates as he deems advisable for emergency appropriations to be expended upon authorized construction, with the object of aiding in the prevention of unemployment. Every head of a department or independent establishment having jurisdiction over construction agencies is required by the act to direct each such agency to prepare a six-year advance plan, with estimates showing estimated costs for land, new construction, annual operation, repairs and alterations. Each such construction agency is required also to prepare a program for the prompt initiation and execution of an expanded program at any time, and to revise its six-year plan annually. The board is directed to collect information concerning the advance construction plans of the states, municipalities and other public and private agencies.

Wages in Contracts for Public Buildings.—An act (S. 5904, Pub., No. 798, approved Mar. 3) provides that every contract in excess of \$5,000, to which the United States or District of Columbia is a party and which involves employment of laborers or mechanics in the construction, alteration or repair of any public building in the States of the United States or in the District of Columbia, shall contain a provision that the rate of wages for all laborers or mechanics employed by any contractor or sub-contractor on the public buildings covered by the contract shall be not less than the prevailing rates of wages for similar work in the locality. In case of dispute as to what are the prevailing rates of wages, the matter shall be referred to the Secretary of Labor, whose decision shall be conclusive. A proviso authorized the President, "in case of national emergency", to suspend the provisions of the act.

Saturday Half-holiday.—One act (S. 471, Pub., No. 783, approved March 3) provides that four hours shall constitute a day's work on Saturdays for all civil employees of the Federal Government, except employees of the Postal Service, Panama Canal, and the Interior Department in the field. It permits, however, a head of a department, who, "for special reasons", determined by himself, decides that certain employees cannot be spared, to require longer Saturday work; in such case the employees in question shall be entitled to an equivalent shortening of a work-day on some other day. Another measure (H. R. 6603, Pub., No. 672, approved Feb. 17) provides that where employees of first and second class post offices are required to work over four hours on Saturday they shall be allowed a compensatory time off within five week-days succeeding the Saturday on which the excess service is performed.

NATURALIZATION

An act (H. R. 10672, Pub., No. 829, approved March 3) provides that any native-born woman who has lost her citizenship either by residence after marriage to an alien or by marriage to an alien ineligible for citizenship, may (if she has not acquired any other nationality by affirmative act) be naturalized, and through the simpler procedure available for alien women married to United States citizens; this latter procedure does away with the requirement of a declaration of intention, and requires a residence of only one year, instead of five, preceding the application for naturalization. The act explicitly repeals section five of the Act of September, 1922 (vol. 42, p. 1022) which provided that "no woman married to an alien not eligible to citizenship shall be naturalized during the continuance of the marital status."

PROHIBITION

The National Prohibition Act was amended (H. R. 9985, Pub., No. 557, approved Jan. 15) for the purpose of discriminating between casual and habitual commercial violators. It

I. AMERICAN POLITICAL HISTORY

provides that any one who violates the Prohibition Act by (a) selling or transporting not over one gallon of liquor, provided he has not within two years previous been convicted of a violation of the Act and is not engaged in the habitual violation of the same, or (b) unlawfully making liquor, in the production of which no other person is employed, or (c) assisting in the unlawful making or transporting of liquor as a casual employee only, shall for each offense

be subject to a fine not to exceed \$500 or to confinement in jail without hard labor, not to exceed six months, or to both penalties.

NATIONAL ANTHEM

This act (H. R. 14, Pub., No. 823, approved March 3) provides in full as follows: "That the composition consisting of the words and music known as The Star-Spangled Banner is designated the national anthem of the United States of America."

THE PRESIDENT AND HIS POLICIES

BY JAMES HART

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PRESIDENT HOOVER AND THE DEPRESSION

Villification.—The chief indoor sport of 1931 has been villification of Herbert Hoover. Much of it has been thoughtless, some of it cheap. Many who are too intelligent to blame the President for hard times complain because he has not done more to remedy the situation.

Agricultural Rehabilitation.—It is first in order to enumerate some of the policies which Mr. Hoover has inaugurated. After an acrimonious dispute with the Senate, the President finally agreed to sign an appropriation bill for the Interior Department which carried a compromise rider appropriating \$20,000,000 for agricultural rehabilitation loans. Secretary Hyde, upon demand by the Senate, said that beneficiaries of such loans would not be banned from buying food. The Administration had vigorously opposed a "dole" of \$25,000,000 to be used by the Red Cross, and that body itself had objected.

Veterans' Loans.—The President sought to protect the Treasury by vetoing a bill to extend the loan privileges on veterans' service certificates from 22½% to 50% of their face value. His veto was overridden.

Veto of Wagner Bill.—The adjournment of Congress on March 4 enabled the President to pocket veto

the Wagner employment bill. This action seemed inexcusable. He refused to call an extra session of Congress.

Wage Maintenance.—The President's wage maintenance policy at the least postponed wage cuts, and thus sought to keep up purchasing power and probably did contribute to the prevention of the serious industrial strife which usually accompanies depressions. He urged employers to give part-time work instead of discharging some employees and thus to distribute work so as to have breadwinners in a maximum number of families.

Organized Relief.—Mr. Hoover opposed any form of "dole," and urged and sought to organize local and voluntary relief. He made an able business man, Walter S. Gifford, chairman of his committee on unemployment relief.

Governmental Economy.—In preparing budgetary estimates the President set to work, in view of the impending deficit, to reduce Federal expenditures at every feasible point. He condemned, in a vigorous statement, short trading as distinguished from ordinary hedging operations; and put into operation the greatly enlarged program of Federal construction. At the same time he sought to stimulate construction by the states,

THE PRESIDENT AND HIS POLICIES

municipalities, and private concerns, especially utilities.

Soldier Bonus Settlement.—In September Mr. Hoover went to Detroit to address the convention of the American Legion. He bravely opposed the proposal for a cash bonus settlement, and won the support of the convention. In so doing he forestalled a plan that would have been a serious drain upon the Treasury.

Credit Proposals.—In October the President laid before congressional leaders a plan to ease the serious credit situation which had developed. He then proposed a privately financed National Credit Corporation, which was speedily organized by the bankers. The purpose was to rediscount banking assets not now eligible for rediscount at the Federal Reserve banks. Other credit proposals were set forth again in his annual message.

Home Building.—Mr. Hoover called a conference on home building and home ownership, and announced a plan to set up in each Federal Reserve district a home loan bank to rediscount home mortgages and thereby stimulate home building and the building industries.

PRESIDENT'S DECEMBER MESSAGES

Review and Recommendations.

The President reviewed for Congress the steps already taken, and made important recommendations. He stated that immigration had been curtailed by administrative action, and recommended that this restriction be placed upon a more definite basis of law. He held that the action of the Federal Farm Board in granting credits to farm cooperatives had saved many of them from bankruptcy, and said the Board had enabled the cooperatives to "cushion" the fall in prices, although continued over-production had partly defeated its efforts. He pointed out that the rates charged by services competing with the railroads should be regulated by "some authority." He reported "wide conviction" that some changes be made in the anti-trust laws, espe-

cially in the procedure under them, and suggested congressional inquiry into their economic action. Particular attention, he said, should be given the industries founded upon natural resources, specifically bituminous coal, oil, and lumber. But he did not favor the repeal of the anti-trust laws.

Tariff Revision.—"I am opposed," said the Chief Executive, "to any general congressional revision of the tariff. Such action would disturb industry, business and agriculture. It would prolong the depression."

The "Dole."—"I am opposed," he said further, "to any direct or indirect Government dole." In the Indianapolis address in the summer he had placed a Federal unemployment insurance system in this category, adding that he had long advocated such insurance if established through private enterprise. His message also said: "It is estimated that the Federal taxpayer is now directly contributing to the livelihood of 10,000,000 of our citizens. . . . We must avoid burdens upon the Government which will create more unemployment in private industry than can be gained by further expansion of employment by the Federal Government." This was his answer to proposals of a gigantic hunger loan for employment on public works.

Credit Proposals.—There were several proposals on credit. "Our first step toward recovery is to re-establish confidence and thus restore the flow of credit." Accordingly, he proposed authorization of Federal subscription of further capital to the Federal land banks; the establishment of a system of home loan discount banks; an Emergency Reconstruction Corporation for a two-year period, with "a reasonable capital" subscribed to it by the Federal Government. This corporation was to be analogous to the War Finance Corporation. He repeated an earlier proposal for an extension during emergencies of the eligibility provisions in the Federal Reserve Act, adding that "nothing should be done which would lower the safeguards of the system."

I. AMERICAN POLITICAL HISTORY

Again, he indicated that "a method should be devised to make available quickly to depositors such portion of their deposits in closed banks as the assets of such banks may warrant." He also recommended the prompt improvement of the banking laws, suggesting several of the questions involved and stating the need for greater protection of depositors.

Federal Finances.—About Federal finances he said: "We must have insistent and determined reduction in Government expenses. We must face a temporary increase in taxes. . . . We must partially finance the deficit by borrowing." His budget message set forth a plan calculated to balance the budget by 1934. He proposed cuts in expenses, but left Secretary Mellon to outline the details of a tax increase to end two years from July 1, 1932. Mr. Mellon proposed, in his usual conservative vein, various new taxes, and increases in existing rates. It was estimated that his recommendations on the emergency income tax would hit 1,700,000 more incomes. With a Democratic House and a Senate in which progressive Republicans hold the balance of power, it is probable that his scheme will be materially altered.

SUMMARY AND CRITIQUE

Objectives.—In general, the President aimed to preserve purchasing power; to stimulate and organize local and voluntary relief; to enlarge employment upon public works; to oppose raids upon the Treasury by the veterans or by any scheme suggesting a dole; and to "thaw out" the "frozen credits" by producing credit inflation, or, as he preferred to call it, the curtailment of deflation. His policy is best described, in the words of his annual message, as an effort to "cushion the violence of liquidation in industry and commerce." He reiterated his insistence upon "the maintenance of the American system of individual initiative and individual and community responsibility."

Constructive Measures.—It can be said at once that the President has

made more constructive moves than any other president has made in time of depression. This is partly due to the new conditions of this industrial era and a changed relation of government to economic life. It is also partly to the personal credit of the Chief Magistrate. Justly did he say at Indianapolis: "For the first time in history the Federal Government has taken an extensive part in mitigating the effects of depression and expediting recovery."

Progressive Criticism.—Yet to the progressives and to many liberals the Hoover remedies seem inadequate. The latter scoff at his philosophy of rugged individualism as outworn, and suggest that some of his policies are inconsistent with such preachments.

Observations.—The philosophy of the American policy is basically a heritage from the agricultural era. Even those who favor a dole are thinking in terms of charity rather than in terms of a fundamental economic reconstruction. Probably the President has gone as far as it is safe to go without suddenly abandoning the American system entirely. He does not carry his own individualism to its logical conclusion. He talks the old language, but his individualism is a rather modern brand. Through his Farm Board's policy in purchasing wheat and cotton, as less flagrantly in other ways, he belies his own *clichés*. This inconsistency, however, is not so much personal as national. We act now upon pioneer individualism, now upon a pragmatic collectivism forced upon us by the practical necessities of modern economic life. If Herbert Hoover has not got beyond this, who in America has?

HOOVER DEFICIENCIES

The President deserved to suffer for his half-promise of the economic millennium in the 1928 campaign. He refused for an unforgivable length of time to admit the seriousness of the depression. He has retarded national thinking by preaching his absurdly

THE PRESIDENT AND HIS POLICIES

old-fashioned brand of individualism. Man does not live by bread alone; but when he talks of the things of the spirit, his words have the hollow ring of the business man he is. He is to be pitied for his childish sensitiveness to criticism as well as for his flabby exterior. Men still need heroes, and he cannot play the rôle. In giving him credit for what he has done, one finds it hard to admire the man as one admired Wilson, to be thrilled by him as one was thrilled by Roosevelt, or even to be warmed by him, as one was warmed by Taft.

FOREIGN POLICY

War Debt Moratorium.—During 1931 the Republican party returned, at least for a while, to its pre-war policy of international participation. In proposing the one-year moratorium on debts and reparations, Mr. Hoover acted the part which the Hoover myth would have led one to expect as his normal rôle. The response of the country was immediate, though by the time Congress met a reaction had set in. When France demurred, the Administration showed a patient firmness which was admirable. In getting individual pledges to vote for the measure from a majority of each house of Congress, the President made an innovation fully justified in the emergency of the threatened financial collapse of Germany. At the close of the year, the Administration still denied the intention of debt cancellation, but asked Congress to recreate the debt commission for a reconsideration of capacity to pay. This was playing safe at home, and at the same time leaving an unavowed weapon with which to seek reparation revision and disarmament.

German Credits.—In his annual message, the President, after recounting his initiative in the Hoover moratorium, said: "Upon our further initiative an agreement was made by Germany's private creditors providing for an extension of such credits until the German people can develop more permanent and definite forms of relief."

Manchuria.—In the Manchurian crisis, the President and Mr. Stimson so acted as to avoid anti-Japanese feeling in America, while they wisely worked with the League of Nations. It was a bold move for a Republican President to authorize Prentiss Gilbert actually to sit in meetings of the League Council. Later, however, apparently in the fear of moving too rapidly, Ambassador Dawes was instructed to stand by, but not to sit in, the adjourned meetings of the Council at Paris. The President is not to be blamed for failing to prevent Japanese aggression. It is a failure of world opinion as a weapon of restraint.

Personal Conferences.—Further cooperation was involved in the summer conferences which Secretaries Stimson and Mellon had with European statesmen while these two cabinet members were abroad. The same tendency was dramatized in the visits to Washington first of Premier Laval, of France, and then of Foreign Minister Grandi, of Italy. Of course, all these events were consequences of the financial emergency. The probability that the Government will not be represented at the Hague conference on reparations indicates that the Administration does not care to get too deeply involved so soon before the 1932 election.

Nicaragua.—During the year Nicaragua again loomed upon the horizon of foreign affairs. In April conditions in that country forced the sending of warships. The Administration invoked the criticism of jingoes when it nevertheless adhered to its policy for the gradual withdrawal of the marines, and advised Americans to withdraw from the interior. In his annual message the President said: "We have continued our policy of withdrawing our marines from Haiti and Nicaragua." Secretary Stimson had said that the training of a Nicaraguan constabulary was the justification for the policy. Whether or not the press exaggerated the "reversal" of the Kellogg policy, the present Administration has shown a more wholesome attitude than its predecessor.

I. AMERICAN POLITICAL HISTORY

MISCELLANEOUS POLICIES

Muscle Shoals Veto.—Mr. Hoover vetoed on March 3 a bill which he described as proposing "the transformation of the war plant at Muscle Shoals, together with important expansions, into a permanently operated Government institution for the production and distribution of power and the manufacture of nitrates." His veto was sustained by the Senate. Later, he secured a committee to study the problem, and laid their recommendations before Congress in December.

Eighteenth Amendment.—In transmitting the Wickersham report on prohibition to Congress, the President stated his approval of the view that the Eighteenth Amendment should not be repealed. He went further, and said he "must not be understood as recommending" the commission's suggestion of a possible future revision of the amendment.

Philippine Independence.—In October the President said that Philippine independence was a matter of time, but that economic independence must be attained before political independence can be successful. This was in effect a reply to the independence propaganda sponsored by American beet sugar interests, which desire tariff protection against Philippine competition.

Armament.—In his annual message the President denied that reductions and postponements in the war and naval establishments as proposed by him would reduce the existing personnel or impair morale. He suggested "the gradual expansion of the deficient categories in our navy to the parities provided in those treaties."

Electrical Power.—Finally, the message renewed the recommendation for the effective regulation of interstate electrical power as the essential function of the reorganized Federal Power Commission.

NATIONAL PERSONALITIES

BY JAMES HART

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THE CABINET

Henry L. Stimson.—Woodrow Wilson was his own foreign minister. Secretary Hughes furnished the brains of the Harding foreign policy. The relation between President Hoover and Secretary of State Stimson seems to stand between these extremes. These two statesmen have together provided the most enlightened conduct of foreign affairs of the post-war era. Mr. Stimson has ability, high-mindedness, and sincerity, without the brilliance of Charles Evans Hughes.

Mellon.—Secretary of the Treasury Mellon has recently been described as "the man who stayed too long." He has lost prestige during the depression, although he is the same man he was during Coolidge prosperity. He opposed the bonus bill, conferred with European states-

men during the summer crisis while he was abroad, and presented the Administration's plan for a temporary increase in taxes calculated to balance the budget by 1934.

Ogden L. Mills. Undersecretary of the Treasury, is among the most intelligent of the orthodox Republicans at Washington. He has frequently been the Administration's spokesman in financial matters.

HOUSE OF REPRESENTATIVES

Nicholas Longworth disproved the theory that the Speakership had been "destroyed" by the "revolution" of 1910-11. He had been an able leader of the Administration forces in the House in opposing a recalcitrant Senate. His weapon had been suavity rather than the big stick. President Hoover signified his ap-

NATIONAL PERSONALITIES

preciation by attending the late Speaker's funeral in Cincinnati.

Speaker Garner.—In December, the new House elected to the Speakership Longworth's personal friend and political foe, John Nance Garner, of Texas, formerly leader of the Democratic minority. Mr. Garner is also a real party leader, and the first Democratic Speaker since 1919. He and Senator Joseph T. Robinson, floor leader of the Democratic minority in the Senate, organized a Democratic policy committee to coordinate and harmonize Democratic policy in the two branches of Congress. This is an interesting innovation in party machinery in Congress.

THE SENATE

Dwight W. Morrow.—The death of Senator Dwight W. Morrow, of New Jersey, was a shock to his fellow-countrymen. During his short service at Washington, Mr. Morrow had said nothing and voted as a "regular." He had, however, won the confidence and admiration of the nation, most notably by his fine work as ambassador at Mexico City. Many observers had looked with favor upon him as a potential Republican candidate for the presidency in 1936.

Senator William E. Borah, of Idaho, has a genius for making the front page. During Premier Laval's visit to Washington the Senator usurped the headlines by an interview with the French correspondents which advocated revision of the Treaty of Versailles. This interview, while not exactly timely, showed Mr. Borah in his favorite rôle of irresponsible adviser to the world.

Senator George W. Norris of Nebraska was a leader in organizing and conducting a progressive conference held in Washington in March. Mr. Norris rejected Professor John Dewey's proposal of a third party as impractical.

ADMINISTRATORS

Colonel Roosevelt.—Theodore Roosevelt, Jr., is reported to be an ex-

ceptionally successful and popular governor of Porto Rico.

Walter S. Gifford, of the American Telephone and Telegraph Company, was appointed chairman of the President's committee on unemployment relief. He has the reputation of being a most able administrator.

Woodcock.—In July Amos W. W. Woodcock reported that complaints over abuses in prohibition enforcement had declined, and expressed the sensible policy of concentrating attention upon the commercial violators of the Volstead Act. As enforcement chief, Woodcock has acted with sanity and sincerity. He has done his job as well as that job could be done.

IMPERSONAL ADMINISTRATION AND INVESTIGATION

Wickersham.—Government by commission produces a somewhat impersonal statesmanship. This is illustrated by the reports of the Wickersham Commission. The official summary of its prohibition report was severely criticised for giving a distorted impression of the individual views expressed in the full report.

Stone.—Another illustration is found in the work of the Federal Farm Board. James C. Stone succeeded Alexander Legge as chairman of this Board. The Board made loans to agricultural cooperatives, and sought to "cushion" the decline in agricultural prices by purchasing on the market large quantities of wheat and cotton. This policy was finally discontinued as inadequate in the face of continued overproduction. The Board was left with large holdings of these products which were a threat to the current market and on which the government had paper losses. Its announced policy was to sell gradually.

UNINTENTIONAL HOOVER MEN

Hiram Johnson.—Three men stood out as critics of the President, but unintentionally helped him in

the eyes of thoughtful men. Senator Hiram Johnson, Republican, of California, by his unreasonable attacks emphasized the reasonableness of the Administration's foreign policy.

William Howard Gardiner, of the Navy League, accused the President of "abysmal ignorance" of naval matters. In getting angry and appointing a committee to whitewash him, the President made a tactical error. Abuse from naval fanatics might better be ignored.

McFadden.—Soon after Congress met in December, Representative **McFadden**, Republican, of Pennsylvania, rendered the President a notable service by making such an unjustifiable attack upon him and his moratorium policy as to win for Mr. Hoover the momentary sympathy even of Democrats.

DEMOCRATIC CANDIDATES FOR THE PRESIDENCY

Roosevelt.—The close of the year found Governor Franklin D. Roosevelt of New York leading the field. However, the "stop Roosevelt" movement was increasing in momentum, and he did not seem to have even a majority, much less the required two thirds, of the votes in the coming convention. Many states seem prepared to vote for "favorite sons" on the early ballots. Rumors persisted that ex-Governor Alfred E. Smith opposed the nomination of his fellow New Yorker. Much probably depends upon Mr. Smith's attitude, since he still has a large and loyal following in the party. The Senate progressives seem to favor Roosevelt, largely because of his liberal views on the power question. Observers watch with interest the possible political consequences for Roosevelt of the exposure of Tammany graft being made by that genius at investigation, Judge Samuel Seabury. The latter's work in this connection has given him national renown.

Baker.—During the second half of the year Newton D. Baker, of Cleveland, figured more and more largely

in the discussion of possible nominees.

Ritchie.—Unlike Roosevelt and Baker, Governor Albert C. Ritchie, of Maryland, is an avowed aspirant. In January he was inaugurated for his fourth gubernatorial term. Towards the close of the year he visited a number of cities, and seemed to be boomed as a counterbalance to the Roosevelt movement by certain anti-Roosevelt forces which realized the disadvantages of a scattered favorite-son opposition. In his economic views Ritchie is of the old school.

Young and Traylor.—Owen D. Young and Melvin A. Traylor, the Chicago banker, are also frequently mentioned. They are both too closely allied with big business to be satisfactory to the progressives. However, both Young and Baker are less reactionary than Ritchie. Mr. Traylor's views are not generally known. Few even among Smith's friends consider it possible for Smith to be nominated again.

JUDICIAL STATESMEN

During the year Justice Oliver Wendell Holmes was honored on his ninetieth birthday, and Justice Louis D. Brandeis on his seventy-fifth. There were signs that Chief Justice Charles Evans Hughes and Justice Owen J. Roberts—both Hoover appointees—would help swing the Supreme Court back from its ultra-conservatism of the post-war decade. These four justices, together with Justice Harlan F. Stone, another so-called "liberal", constitute a majority of the court when they vote together. It would be more appropriate to designate their attitude as judicial open-mindedness and enlightened statesmanship than as liberalism.

NOBEL PEACE PRIZE WINNERS

This year this honor was awarded jointly to Miss Jane Addams of Chicago, and President Nicholas Murray Butler of Columbia University. Both of them are notable figures in American public life and sincere advocates of peace.

FEDERAL ADMINISTRATIVE COMMISSIONS

FEDERAL ADMINISTRATIVE COMMISSIONS

By LLOYD M. SHORT

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FEDERAL FARM BOARD

Personnel.—Alexander Legge, Chairman of the Federal Farm Board, resigned March 6, 1931. James C. Stone of Kentucky, succeeded Mr. Legge, and Sam H. Thompson of Illinois, farm leader, succeeded Mr. Stone. C. C. Teague, California, representing the fruit and vegetable industry, and S. R. McKelvie, Nebraska, grain representative, whose terms expired June 15 also tendered their resignations. William F. Schilling, Minnesota, representing the dairy industry, was reappointed, and Frank Evans, Utah, was selected to succeed Mr. Teague. The other vacancy has not been filled.

Wheat Stabilization.—The Farm Board gave notice March 23 that it would discontinue its purchases of wheat in an effort to stabilize prices at the end of May and that it would endeavor to dispose of existing stocks in such a way as to impose a minimum burden upon domestic and world markets. In a further statement issued April 20 the Board announced its intention of disposing of its entire supply of wheat in foreign markets as rapidly as possible without unduly depressing market prices. Despite these advance notices, the cessation of government purchases of wheat on May 29 resulted in another sharp decline in domestic prices. Western senators and farm representatives, failing in their efforts to secure a pledge from the Board that it would withhold its wheat from the market for a fixed period or until the domestic price had risen to 85 cents or \$1 per bushel, appealed directly to President Hoover. The latter on June 27 announced that he had suggested to the Board, in view of the unusual conditions growing out of the depression, the wisdom of considering a more definite policy with

respect to sales of the holdings of the Grain Stabilization Corporation, and on June 30 the Farm Board gave public notice of its decision to limit its sales to a cumulative maximum of 5,000,000 bushels a month, exclusive of sales to foreign governments, and to make no immediate sales even of this limited amount at the current range of prices.

Cotton Stabilization.—With respect to cotton, the Board announced June 8 that the 1,300,000 bales held by the Stabilization Corporation would not be sold at the existing price level. Government estimates issued Aug. 8 indicating a crop 1,500,000 bales in excess of 1930 resulted in cotton prices plunging downward to new lows. On Aug. 12 Chairman Stone sent telegrams to the governors of 14 cotton-producing states seeking their coöperation in getting the assent of growers to plow under every third row of cotton upon condition that the Board withhold its surplus cotton from the market for another year. The state executives reacted unfavorably to this proposal, terming it wasteful and impractical, but at a conference held in Jackson, Miss., Nov. 28, delegates from 10 of the 11 cotton-producing states represented approved a plan previously initiated in Texas and already adopted by three other states calling for a 50 per cent reduction in planting in 1932 and 1933.

Wheat and Cotton Purchases.—During hearings conducted by the Senate Agricultural Committee late in November, Chairman Stone of the Farm Board reported total purchases of wheat of 329,641,052 bushels, of which 189,656,187 remained unsold on Nov. 1, with an estimated loss of \$102,000,000 at prevailing prices, and total purchases of cotton of 1,319,809 bales of which 1,310,789 bales re-

I. AMERICAN POLITICAL HISTORY

mained on hand November 1, with an estimated loss of \$75,000,000.

Loans.—By act of Congress the final portion of the Board's \$500,000,000 revolving fund, amounting to \$100,000,000, became available July 1. Chairman Stone reported to the Senate Agricultural Committee Nov. 24 a total of \$255,866,458 loaned to coöperative marketing associations prior to Nov. 1, 1931, and repayments amounting to \$146,367,203. \$406,432,642 had been advanced to the stabilization corporations of which \$171,329,998 had been repayed. \$45,000,000 of the Board's revolving fund remained uncommitted and \$22,000,000 committed but not yet used.

FEDERAL POWER COMMISSION

Personnel.—The first official act of the reorganized Federal Power Commission was the summary dismissal on Dec. 23, 1930, of three of the employees of the former commission,—F. E. Bonner, executive secretary; C. A. Russell, solicitor, and W. V. King, chief accountant. This action, which was explained as an effort to put an end to the internal strife which had existed within the offices of the Commission due to the conflicting views of Bonner on the one side and Russell and King on the other relative to the powers and jurisdiction of that body, elicited bitter condemnation from progressive senators who looked upon Russell and King as opponents of the power trust. The Senate voted 44 to 37 on Jan. 9 to request President Hoover to return the nominations of the three commissioners and to reconsider the vote by which they were confirmed. The President promptly refused to comply with the Senate resolution, and in a public statement vigorously defended the action of the commissioners. The Senate on Jan. 23, by a vote of 45 to 32, returned their nominations to the Interstate Commerce Committee. The nominations were reported back unanimously by this committee on Feb. 3 without recommendation. The Senate re-confirmed the nominations of Garsaud and Draper but rejected the nomination of Chairman Smith.

Meanwhile a resolution introduced by Senator Walsh requesting the United States Attorney for the District of Columbia to institute *quo warranto* proceedings in the District of Columbia Supreme Court to test the right of Chairman Smith to hold office was referred to the Senate Judiciary Committee which ordered a favorable vote on Jan. 26, and the resolution was adopted by the Senate without a record vote on Feb. 5. John W. Davis, former U. S. Solicitor General, was selected by a subcommittee of the Senate Judiciary Committee on Feb. 18 to serve as chief counsel in the case, and Alex J. Groesbeck, former Governor of Michigan, was chosen to assist him. Dr. Smith announced April 1 that former Senator George Wharton Pepper of Pennsylvania, who had refused to serve as Senate counsel, would represent him in the case as a matter of "public service," and Attorney General Mitchell stated that the Department of Justice would appear as "friends of the court" in behalf of Smith, though debarred from serving as his counsel. Senate counsel formally petitioned the District Supreme Court for a writ of *quo warranto* on May 4 and Mr. Pepper, counsel for Smith, replied on May 23. Decision in the case was delivered by Justice Gordon on Dec. 6, who upheld the right of Dr. Smith to his office.

Jurisdiction.—The Power Commission won a signal victory when the District of Columbia Supreme Court on Jan. 30 dismissed a petition for a temporary injunction sought by the Clarion River Power Co. of Johnstown, Pa., to restrain the Commission from holding a hearing upon conflicting valuations of the company property for the purpose of determining the actual legitimate investment of the company. On April 3, the Commission, after formal hearings, denied the request of the Appalachian Electric Power Company for a "minor-part" license for its proposed \$11,000,000 hydro-electric plant on the New River in Virginia, holding that it was vested with the right to assume full control over such

FEDERAL ADMINISTRATIVE COMMISSIONS

projects upon non-navigable waters whose flow affects navigable streams. During the hearings five states,—Virginia, West Virginia, Arkansas, Tennessee, and Kentucky—argued against the authority of the Commission as an infringement upon states' rights, while Governor Pinchot of Pennsylvania filed a brief upholding the Commission's power. The former commission had refused to rule upon this important question of jurisdiction and Attorney General Mitchell had ruled that a "minor-part" license could be issued in such cases. The Appalachian Power Company filed suit on June 9 in the U. S. District Court at Lynchburg, Va., attacking the constitutionality of the Federal Water Power Act of 1920.

Investigations.—The decision of the Power Commission, made public on April 22, to address a questionnaire to each of its licensees seeking information as to the form and extent of state regulation of hydroelectric plants was supplemented several weeks later by the engagement of Dr. W. M. W. Splawn, former special investigator of the House Interstate Commerce Committee in its study of railroad holding companies, to make a complete survey of the ownership, control, and operation of all hydroelectric companies operating under Federal licenses. The latter study was further expanded on Aug. 9 to include a complete analysis of intercorporate relationship in the industry and the major problems of power economics.

FEDERAL RADIO COMMISSION

Equalization and Maximum Power.—General Order No. 102, adopted by the Radio Commission in January by a vote of 4 to 1, provides that no zone or state which is over quota, in accordance with the unit basis of measurement employed by the Commission, will be granted additional frequencies or power. Broadcasters in an under-quota state within an over-quota zone, however, may apply for facilities of over-quota states in the same zone, or a station in an over-quota state may seek fa-

cilities already assigned to another station within the same state. Applicants from under-quota states may ask for facilities in use either in an over-quota state in the same zone or in an over-quota state in an over-quota zone. Theoretically designed to permit the gradual equalization of broadcast facilities in compliance with the Davis Amendment, practically this order serves to maintain the *status quo* inasmuch as both the Commission and the courts have adhered closely to the rule that stations should not be deprived of their present facilities if they can show a continuously good record of public service. The District of Columbia Court of Appeals in January held the Commission's reallocation order of April 30, 1930, changing the assignments of 26 stations operating on cleared channels, to be void because the Commission had failed to provide for a hearing before issuing the order.

Reiterating his original recommendation of Dec. 15, 1930, that General Order No. 42 be amended to permit maximum power (50,000 watts) on all of the 40 cleared channels instead of the 20 authorized by the Commission, Chief Examiner Yost submitted a supplementary report in January, selecting 8 of the 20 stations previously recommended for maximum power. Following hearings and the filing of exceptions to this report, the Commission took the case under advisement, voting in July to defer final action until Oct. 1. On the latter date the commission decided to grant licenses with maximum power to 9 additional stations, altering the report of its chief examiner in two instances and including one more station in the fifth zone to take the place of station KNX, Hollywood, which had forfeited a construction permit. Five of the stations whose applications for maximum power were thus denied brought suit in December in the District Court of Appeals to test the validity of General Order No. 42 which limits the number of stations with maximum power to four in each of the five zones.

I. AMERICAN POLITICAL HISTORY

Radio Monopoly.—Section 13 of the Radio Act of 1927 provides that licenses shall be denied to any company or its subsidiary finally adjudged to have created or attempted to create a monopoly in radio communication. Following the refusal of the U. S. Supreme Court to review the case in which the Radio Corporation of America was found to have violated the anti-trust laws in requiring all radio manufacturers using its patents to install initially R. C. A. tubes, the Radio Commission on May 7 voted to conduct hearings to determine its policy with respect to the 1409 radio licenses held by R. C. A. and its subsidiaries, and to grant temporary renewals of these licenses pending the outcome. The District Supreme Court denied on June 12 a petition of four subsidiaries of R. C. A. seeking to restrain the Commission from holding hearings. On June 24, at the conclusion of the hearings, the Commission voted 3 to 2 to renew the licenses, the majority holding that the question of a monopoly in radio communication was not involved in the tube-contract case. The prolongation of this case indefinitely was foreseen in the appeal on July 14 from the Commission's decision of station WTMJ of Milwaukee, an applicant for the channel now occupied by station WENR of Chicago, which is owned and operated by N. B. C., and R. C. A. subsidiary.

Property Rights in the Air.—A decision of major importance was rendered by the Circuit Court of Appeals in Chicago in upholding the judgment of the lower court granting an injunction to restrain station WMBB-WOK of that city from operating after the Radio Commission had refused to renew its license in an effort to reduce interference in that area. The court denied the contention of the owners of this station that they had acquired a vested property right in the radio channel assigned to them. With its authority thus strengthened and clarified, the Commission is in a much stronger position to deal with the overcrowded

condition in the broadcast band, admittedly the worst ailment of broadcasting.

FEDERAL RESERVE BOARD

Personnel.—The Senate on Jan. 22 voted to recommit to its Committee on Banking the nomination of Eugene Meyer, Jr., of New York to be governor of the Federal Reserve Board, after Senator Brookhart of Iowa had protested against the failure of the committee to give him an opportunity to question the nominee. The committee on Jan. 24 appointed a subcommittee of 5 to investigate charges made by Brookhart that Meyer had "conspired" to ruin the joint stock land banks while serving as Farm Loan Commissioner of the Federal Farm Loan Board. Chairman McFadden of the House Committee on Banking and Currency appeared as a witness against the nominee at the hearings which began Jan. 27, charging that the way had been cleared deliberately in order to make a place for Meyer as governor of the Board through the resignations of Governor Young and Vice-governor Platt, both of New York. The nominee refuted the charges made against him but refused to become involved in a discussion of the future policies of the Reserve Board. Hearings were concluded Feb. 8 and the subcommittee voted 3 to 2 on Feb. 11 for a favorable vote to the full committee. Meyer's nomination subsequently was approved by the committee and confirmed. George R. James of Memphis, Tenn., first appointed to the Reserve Board in 1923, was reappointed by President Hoover upon the expiration of his term in April, 1931. W. W. Magee of Bennington, Neb., was appointed in May to succeed the late E. H. Cunningham as the farm member of the Board, and Floyd H. Harrison, member of the Farm Loan Board, resigned that office in September to accept appointment to the remaining vacancy on the Reserve Board.

Senate Banking Investigation.—The Glass resolution for an investi-

FEDERAL ADMINISTRATIVE COMMISSIONS

gation of the Federal Reserve System and "all related matters," passed during the second session of the Seventy-First Congress, was used as a vehicle for a general study of the banking situation by the special Senate Committee appointed for that purpose. Questionnaires were sent to bankers and financial leaders in all parts of the country, and extensive hearings were conducted, beginning Jan. 20. Branch banking, the control of stock market speculation, individual and corporate loans to brokers for speculative purposes, and open-market operations within the Federal Reserve System were among the topics most frequently discussed. The report of the committee, prepared by its expert economist, Dr. H. Parker Willis, was made public Dec. 26. It emphasizes the dangers resulting from the increased participation of banks in the security market and criticizes Federal Reserve authorities for their failure to take prompt action looking toward greater control of brokers loans during the stock market speculation. While the report does not contain specific recommendations for curative legislation, it is expected to point the way for important revisions in the banking laws.

Rediscount Privileges and Rates.—Congressional leaders of both parties were summoned to a conference at the White House on Oct. 6. President Hoover outlined measures of a far-reaching character to ease financial credits and release stagnant capital for the purpose of stimulating trade. The President suggested a liberalization of the rediscount privileges of the Federal Reserve banks during periods of emergency to include so-called "frozen assets" such as stocks, bonds, and mortgages. Though the questionnaires received by the special Senate investigating committee revealed general opposition among bankers to broadening the base of paper eligible for rediscount, the President included a similar recommendation in his annual message to Congress with a reservation that nothing be done

to lower the safeguards of the Federal Reserve System.

INTERSTATE COMMERCE COMMISSION

Railroad Consolidations.—The text of the agreement reached by the presidents of eastern railroads for a four-party trunk line merger, announcement of which had been made by President Hoover Dec. 30, 1930, was placed before the Interstate Commerce Commission Jan. 3, 1931. Though the executives announced June 12 that all of the major difficulties in the merger plan had been ironed out, the details of the agreement were not presented to the Commission until Oct. 3. The demand of the Pennsylvania for trackage rights over the Nickel Plate south of Lake Erie, opposed by the New York Central, seems to have been the most difficult problem. The Commission on Nov. 9 ordered a survey of the merger plan under the direction of Commissioner Porter, and hearings were scheduled to begin Jan. 6, 1932. Opposition to the merger has been indicated by influential members of Congress, railroad labor organizations, railroad companies, shippers, and other interested groups. The inability of the Great Northern and Northern Pacific Railroads to comply with the requirement of the Commission in its order of Feb. 21, 1930, that they divest themselves of joint ownership of the C. B. and Q. as a condition to consolidation, led to the withdrawal on Jan. 9 of the petition for a merger of those two roads filed on July 5, 1927. The purchase of the C. and A. by the B. and O. at receivership sale in December, 1930, and the organization of the Alton Railroad Company, a holding corporation, to acquire the stock of the C. and A., the stock of the holding company to be held by the B. and O. which is to operate the road, was approved by the Commission July 17 after extensive hearings begun April 13 during which C. and A. stockholders claimed an equity of \$65,000,000 over and above all indebtedness, whereas the cash price

paid by the B. and O. was only \$23,000,000.

Freight Rates.—The Association of Railway Executives, meeting in Chicago on May 8, recommended "in view of the emergency which exists as to the credit and income of railroads" that an extensive study of freight rates be undertaken for the purpose of effecting such readjustments as would result in increased revenues approximating \$400,000,000 a year. The Interstate Commerce Commission, following a conference with Daniel Willard, president of the B. and O. and spokesman for the executives, announced May 26 that it would not of its own motion initiate a study of financial conditions and increased rates. Consequently the executives on June 11 voted unanimously to petition the Commission for a 15 per cent increase in freight rates, such increases not to affect existing differentials. This petition, accompanied by an exhaustive analysis of the financial condition of the railroads, was laid before the Commission June 17 with a request for prompt action. Commissioners Meyer, Lewis, and Lee were directed to conduct hearings on the petition, which were scheduled to begin July 15. Regional hearings were planned for several cities in addition to the hearings in Washington. Commissioners Porter and Eastman subsequently were added to the list of members in charge. Formal hearings were concluded Sep. 30. The Commission on Oct. 20 unanimously denied the petition of the railroads for a 15 per cent increase on all commodities, but offered a counter proposal involving a surcharge of from \$3 to \$6 per car and from 1 to 2 cents per 100 pounds on all products other than the major farm crops, which it was estimated would yield from \$100,000,000 to \$125,000,000 in increased revenues. The Commission further proposed that this increased income be pooled for the benefit of weaker roads for the payment of interest on fixed obligations. If accepted, the surcharges were to extend not later than March 31, 1933. The railroads were given

until Dec. 1 to submit a plan in accordance with the Commission's proposals.

The railroad executives on Oct. 22, accepted the commission's counter proposals subject to the following conditions: (1) that the advances to weaker roads be in the nature of loans, not gifts; (2) that roads accepting such loans be prohibited from paying dividends; (3) that the revenue pool be administered by the railroads rather than by the government; and (4) that the surcharges for carload shipments be levied upon a "cents per net ton" rather than a "per car" basis. These conditions, together with tentative plans for the formation of a credit corporation to administer the revenue pool, were submitted formally to the Commission Nov. 19 and on Dec. 7 that body by a vote of 7 to 4 gave its approval to the amended plan, whereby the rate increase was no longer made dependent upon the loan plan and if sufficient carriers were unwilling to aid in the formation of the credit corporation the roads might benefit individually thereunder. Commissioners Eastman, McManamy, Porter, and Mahaffie dissented on the ground that there was no definite assurance the loan plan would be made effective and the proposed credit corporation would not be subject to governmental regulation. Though the revenue pool was thus made optional, the roads proceeded promptly to organize the proposed credit corporation. Roads in receivership, already in default on their obligations, unable to meet fixed charges even with loans from the corporation, or deriving more than 50 per cent of their income from passenger traffic were denied the privilege of loans. Thus with one road refusing to participate, and 20 ineligible, 134 of the 155 Class I roads may be beneficiaries of the fund. The commission issued an order on Dec. 24 permitting the roads to file a blanket tariff embodying the surcharges with authority to put the increased rates into effect upon 5 days' notice instead of the usual 30. The roads immediately an-

PRESIDENT HOOVER'S WAR DEBT MORATORIUM

nounced they would post the new rates Dec. 30, to become effective Jan. 4, 1932.

THE TARIFF COMMISSION

Personnel.—The Senate on Jan. 12 without a roll call vote confirmed the nominations of Chairman Henry P. Fletcher, Vice Chairman Thomas Walker Page, and Commissioners John Lee Coulter and Alfred P. Dennis to membership on the re-organized Tariff Commission. Senator Borah of Idaho opposed the confirmation of Fletcher on the ground of lack of qualifications as a tariff expert. The Senate subsequently confirmed the nominations of Commissioners Lincoln Dixon and Edgar B. Brossard, though determined opposition was voiced against the latter by a sizeable bloc of Democrats and Independent Republicans because of his record as a member of the old commission and particularly his participation in a minority report on a proposed reduction in the tariff on sugar in 1923. Commissioner Dixon was reappointed by the President for a six-year term. Chairman Fletcher announced on July 24 that he planned to resign Sept. 15 but he was persuaded by President Hoover to continue in office another two

months. Commissioner Dennis, in a period of despondency on account of ill health, drowned himself near his summer home at Bailey's Island, Me., on Aug. 29. President Hoover announced Nov. 24 the appointment of R. L. O'Brien, former editor of the *Boston Herald*, as chairman of the Commission to succeed Mr. Fletcher, and Ira Ornburn of New Haven, was named as a Democratic member of the Commission on Dec. 19 to fill the vacancy created by the death of Commissioner Dennis.

Tariff Inquiries.—In a progress report made public by the President in July covering the first 9 months of the Tariff Commission's work since its reorganization, it was revealed that investigations involving 229 articles had been authorized, 110 of which had been completed, and that of the remaining 119, hearings had been held on 33 and 51 others had been advanced to the point of public hearings. All recommendations made to the President were approved with two exceptions, these being returned for further study. In about half of these cases no changes in rates of duty were made, while the remainder were about equally divided between increases and reductions in the 1930 schedules.

PRESIDENT HOOVER'S WAR DEBT MORATORIUM

BY JAMES THAYER GEROULD

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THE AUSTRIAN BANKING CRISIS

The suspension on the payments on international debts, known as the Hoover Moratorium, was occasioned, and made necessary, by an acute financial crisis, the causes for which were complex and far reaching, but which was precipitated by the announcement, on May 11, 1931, that the Austrian government, acting with the *Oesterreichische Nationalbank* and the Rothschilds, had come to the relief of the great Viennese bank, the *Kreditanstalt*, one of the largest, and formerly the most sound.

of European banking institutions. Not only did this bank control more than two-thirds of Austria's banking resources, and, through its investments, a large share of her industry, but it had close relations with the large banks in London, in Berlin, in Paris, and in most of the other European capitals, as well as with those of New York. The news that the *Kreditanstalt* was in difficulties was the signal for the withdrawal of short time credits, which very soon imperilled the stability of banks in other European countries.

I. AMERICAN POLITICAL HISTORY

FINANCIAL EMERGENCY IN CENTRAL EUROPE

Although the immediate emergency was met by an agreement, (May 30) participated in by the Bank for International Settlements, the Federal Reserve Bank, and the central banks of ten of the European countries, to extend to the *Nationalbank* a large credit, and an arrangement for the restriction on the withdrawal of short time loans, the financial position of all of the Central European countries remained very critical. This was particularly true of Germany. The gold reserve of the Reichsbank was reduced by \$244,775,000 in the first three weeks of June, and during the same period, German holdings in foreign exchange shrunk by \$23,400,000. Despite the emergency decree of June 5, drastically reducing expenditures and increasing taxation, the situation steadily became worse.

THE MORATORIUM ANNOUNCEMENT

Acting on the advice of S. Parker Gilbert, former Agent General of Reparations, of Charles G. Dawes, Owen D. Young, and others thoroughly familiar with the situation, President Hoover consulted with a large number of the Senators and Representatives, and after securing assurances of their approval, issued a statement on June 20 in which he proposed that, for a period of one year, payments on all intergovernmental obligations should be discontinued. In the course of his argument in support of this proposal, he reaffirmed the doctrine that reparations and war debts are unrelated, and continued: "I do not approve, in any remote sense, of the cancellation of the debts to us." The response of the country was immediate and enthusiastic. With scarcely any dissent, the newspapers expressed their approval of the action of the President. The stock market reflected financial opinion by a rise in prices of from three to eleven points. There was an insistent demand that a special session of Congress should be called to take final action in ratification, and the President had occa-

sion later to regret that this was not done.

FOREIGN REACTION

Favorable Reception.—Governmental and popular opinion abroad was almost unanimous in its agreement with Mr. Hoover's proposal. Mr. MacDonald, on June 22, and Signor Mussolini, on June 24, assured him of their assent; and within a short time similar communications were received from most of the other European governments, from the British Dominions, and from Japan. The exceptions were France, Yugoslavia and Greece.

The Position of France.—French policy is steadfastly set on the maintenance of the Versailles treaty and the engagements that have grown out of it, and she is unwilling in any manner to forego the advantage she has obtained under them. Facing, as she did, a budget deficit of Fr. 250,000,000, the financial sacrifice demanded of her, larger than that of any other country save the United States, seemed very great. Her sensibilities were disturbed by the abruptness with which the proposal was made, and it seemed to her to be an Anglo-American scheme for her isolation. This feeling was intensified by the wording of a statement made on June 22 by Secretary Stimson. Notwithstanding all this, she was conscious that, both for diplomatic and financial reasons, it was impossible for her flatly to refuse cooperation. Her reply, approved by the Cabinet and dispatched to Washington on June 24, opened with a reference to the concessions already made to Germany, and declared that, as the Young plan had been "freely accepted and recently signed," any suspension of the unconditional annuities therein established would be at "a grave risk of shaking confidence in the value of signatures and contracts." She expressed herself, nevertheless, as willing, "provisionally and for the period of one year, to forego the retention of any payment of the Reich, and to put at the disposal of the Bank for International Settlements a sum equal to the French

PRESIDENT HOOVER'S WAR DEBT MORATORIUM

share of one year's annuity, except for such sums as may be necessary for the remaining contracts for deliveries in kind now in process of execution." The sum so paid in "could be utilized at once for improving credit in Germany, as well as other countries of Central Europe." As the difference between the amount of the unconditional annuity and the total of the payments in kind was not very large, the aid secured by Germany would be insufficient and, in the year beginning July 1, 1932, she would have been compelled to make a double payment.

THE AGREEMENT WITH FRANCE

Washington's response, dated July 1, took the ground that the French proposal failed to provide a sufficient measure of relief for Germany, and that it was not in the spirit of the President's suggestion. It admitted that the principle of the continuance of payments under the Young plan might be maintained, and advanced various counter suggestions. Secretary Mellon chanced at the moment to be in Paris, and with Ambassador Edge, and in constant telephonic communication with Washington, the negotiations were vigorously pushed. On July 6 an agreement was reached, the essential features of which were that the Reich was to continue to pay the amount of the unconditional annuity into the Bank of International Settlements, which would immediately purchase with the money guaranteed bonds of the German railroads. The money might then be reloaned to the German government. The suspected payments and the loan from the B. I. S. were to be payable in ten annual installments, beginning July 1, 1933.

THE FINANCIAL CRISIS IN GERMANY

Short-Term Credit Negotiations.—The delay in reaching the agreement resulted in still further withdrawals of credit and the failure of the great Darmstadter und Nationalbank on July 13. Dr. Luther, the President of the Reichsbank, hurried to Paris in an unsuccessful at-

tempt to secure a supporting loan. The B. I. S. renewed its credits, and this action, together with the closing of all banks and stock exchanges from July 14 to August 5, gave some temporary relief. During the next few days, Chancellor Brüning and Foreign Minister Curtius were in Paris in conference with the French officials and with the American Secretaries of State and the Treasury. It is generally believed that a French loan was offered, but at a political price that the German government was unable to pay. On July 20, representatives of Germany and France, Belgium, Italy, Great Britain, Japan and the United States assembled in London in an endeavor to deal with the situation, but here again political considerations outweighed those which are economic and financial, and very little that was substantial was accomplished. They recommended that the short term credits should be renewed, and that the B. I. S. should call together representatives of the central banks to inquire into the immediate and future credit necessities of Germany.

Wiggin Committee Report.

Such a committee, under the chairmanship of Albert H. Wiggin of the Chase National Bank in New York, met in Basle on August 8, and in turn summoned a conference of representatives of the debtor and creditor private banks. The report of the Wiggin committee constituted the first authoritative analysis of the entire German credit situation. While they held that the economic structure of Germany is fundamentally sound, they were unanimous in their opinion that drastic measures were necessary to prevent its collapse. From the private banks, they secured an agreement continuing short time credits, amounting to \$1,190,000,000, for six months, but they held that permanent relief could come only through the conversion of these into loans of long term. Under existing political conditions, the negotiation of such a loan is impossible. "Until relations between Germany and the other European powers are firmly established on the basis of sympa-

I. AMERICAN POLITICAL HISTORY

thetic cooperation and mutual confidence . . . there can be no assurance of continued and peaceful economic progress." The report ended "by urging most earnestly upon all of the governments concerned that they lose no time in taking the necessary measures for bringing about such conditions as will allow financial operations to bring to Germany—and thereby to the world—sorely needed assistance." While the revision of the Young plan was clearly implied, no direct reference to it was made. Such a revision France steadfastly opposed, unless it can be accompanied by a corresponding revision of the debt settlements with the United States.

London Conference.—During the period in which the Wiggin committee was in session, a conference of governmental experts, sitting in London, formulated an arrangement, immediately approved by their governments, by which delayed annuities on reparations and inter-allied debts are to be paid in ten annual installments, after July 1, 1933, with interest at 3%.

AMERICAN RATIFICATION

The President's Message.—After the opening of the regular session of Congress, President Hoover, in a message sent Dec. 10, asked for the ratification of the agreements and added: "It is clear that a number of the governments indebted to us will be unable to meet further payments to us in full pending recovery in their economic life. It is useless to blind ourselves to an obvious fact. Therefore it will be necessary in some cases to make still further temporary adjustments." He then went on to recommend the recreation of the World War Foreign Debt Commission, "with authority to examine such problems as may arise in connection with these debts during the present emergency, and to report to the Congress its conclusions and recommendations."

Action in Congress.—While there was never any doubt of ultimate ratification, the spirit of isolationism, quiescent in July, had reasserted it-

self; and both parties joined in criticism of the President's proposals. An attempt to secure an informal agreement that, if payments on the foreign debt were not made when due on Dec. 15, the debtor nations "would not be subject to just criticism," failed to secure support, and the administration was compelled to assume the responsibility for the statement. The joint resolution passed the House on Dec. 18 by a vote of 317 to 100, and the Senate on December 23 by a vote of 69 to 12. The rate of interest on the differed payments was raised from 3% to 4%, and an amendment was added to the resolution in which it is "expressly declared to be against the policy of the Congress that any of the indebtedness of foreign countries to the United States should be in any manner cancelled or reduced, and nothing in this joint resolution shall be construed as indicating a contrary policy, or as implying that favorable consideration will be given at any time to a change in the policy hereby declared."

CENTRAL BANK CONFERENCE AT BASLE

During the month of December, another committee of representatives of the central banks, convoked, at the request of Germany, under the terms of the Young plan, was struggling at Basle in an effort to find a way out of the financial morass. The volume of German short term credits was shown to be 50% greater than that estimated by the Wiggin committee. The receipts of the German railroads had fallen to the point where it was impossible to meet from them the payment of R.M. 600,000,000 due on the unconditional annuity. The Reichsbank's gold coverage had fallen to 12%. These and many similar facts showed that, so far from improving, the situation was becoming steadily worse. Debarred by their terms of reference, and by the insistent opposition of France, from any definite recommendation of the revision of the Young plan, the report of the committee, submitted on Dec. 23, can hardly be construed in

THE PROHIBITION CONTROVERSY

any other sense. After a detailed review of the financial situation in Germany, the committee concludes by expressing its opinion that, in the year following the moratorium, she will be unable to meet the conditional payments under the Young plan, which was drawn in the expectation of an expanding world market and a favorable trade balance. A new situation has been created which calls for concentrated action on the part of the governments, and it "may well involve a profound change of

the economic relations of nations one to another. . . . An adjustment of all reparations and other war debts to the troubled situation of the world—and this adjustment should take place without delay if new disasters are to be avoided—is the only lasting step capable of reestablishing confidence. We appeal to the governments, on whom responsibility for action rests, to permit no delay in coming to decisions which will bring an amelioration of this grave crisis which weighs so heavily on all alike."

THE PROHIBITION CONTROVERSY

By IRVING FISHER

PROFESSOR, YALE UNIVERSITY

INTRODUCTORY

The eleventh year of National Prohibition was distinguished by the report of President Hoover's Commission on Law Observance and Enforcement; by the controversy over the relation of prohibition to "hard times"; by agitation concerning allowable use of concentrated fruit juices and concerning physicians' prescriptions of alcoholic beverages; by continued agitation for repeal or modification of the eighteenth amendment and the liquor laws; by further organization of the Prohibition Bureau under the Department of Justice, and by a more systematic administration of the law with an enlarged force.

NATIONAL COMMISSION ON LAW OBSERVANCE AND ENFORCEMENT

Findings.—The Commission found that the results of prohibition as to which there was "objective and reasonably trustworthy proof" were industrial benefits; i.e., "increased production, increased efficiency of labor, elimination of 'blue Mondays.'" It added: "There is strong and convincing evidence, supporting the view of the greater number of large employers, that a notable increase in production, consequent upon in-

creased efficiency of labor and elimination of the chronic absence of great numbers of workers after Sundays and holidays, is directly attributable to doing away with saloons. . . . With all deductions we are satisfied that a real and significant gain following national prohibition has been established."

On the side of social benefits, the Commission noted that there "is general agreement among social workers that there has been distinct improvement in standards of living among those with whom such workers come in contact, which must be attributed to prohibition." Again making all deductions as to other reasons for social improvement, and "weighing all the evidence, there is a clear preponderance to establish a gain." The Commission found that "any program of liquor control should go forward from those economic and social gains. . . . Hence the first desideratum in any constructive plan is to keep closed the saloon and its substantial equivalents." The Commission found that the problem of illegal diversion of industrial alcohol had been largely solved. "Rum row" had been virtually abolished. There was now more careful enforcement, together with greater effectiveness since the application of civil service rules to

I. AMERICAN POLITICAL HISTORY

appointments of prohibition officers. These officers had been specially trained to thoroughness, while avoiding rough displays of force and killings of lawbreakers except in self-defense. The Commission also expressed the "opinion that prior to the enactment of the Bureau of Prohibition Act, 1927, the agencies and enforcement were badly organized and inadequate; that subsequent to that enactment there has been continued improvement in organization and effort for enforcement," but there was "yet no adequate observance or enforcement," and that the existing organization for enforcement was "still inadequate."

In its collective judgment, therefore, and lacking the signature of only one member, Monte J. Lemann, the Commission was recorded as opposed to the repeal of the eighteenth amendment; opposed to the Federal or State Governments, as such, going into the liquor business; opposed to the proposal to modify the National Prohibition Act so as to permit manufacture and sale of light wines and beer; while the Commission deemed cooperation by the States as an "essential element in the enforcement of the eighteenth amendment and the National Prohibition Act," and that support by public opinion in the several States was "necessary in order to insure such cooperation."

Recommendations.—The Commission, therefore, recommended that Federal appropriations for enforcement be substantially increased, and that the "vigorous and better organized efforts which have gone on since the Bureau of Prohibition Act, 1927, should be furthered by certain improvements in the statutes and in the organization, personnel, and equipment of enforcement, so as to give to enforcement the greatest practicable efficiency." It added: "Some of the Commission are not convinced that prohibition under the eighteenth amendment is unenforceable, and believe that a further trial should be made with the help of the recommended improvements, and that if after such trial effective enforcement is not secured, there should be a

revision of the amendment. Others of the Commission are convinced that it has been demonstrated that prohibition under the Eighteenth Amendment should be immediately revised; but recognizing that the process of amendment will require some time, they unite in the recommendations of Conclusion No. 9 [see below] for the improvement of the enforcement agencies.

"All the Commission agree that if the amendment is revised it should be made to read substantially as follows:

"Section 1. The Congress shall have power to regulate or to prohibit the manufacture, traffic in or transportation of intoxicating liquors within, the importation thereof into, and the exportation thereof from the United States and all territory subject to the jurisdiction thereof, for beverage purposes."

Among the recommendations of Conclusion No. 9, referred to above, were:

1. Removal of the causes of irritation and resentment on the part of members of the medical profession by: (a) doing away with the statutory fixing of the amount which may be procured and the number of prescriptions; (b) abolition of the requirement of specifying the ailment for which liquor is prescribed upon a blank to go into the public files; (c) leaving as much as possible to regulations rather than fixing details by statute.

2. Removal of the anomalous provisions in Section 29, National Prohibition Act, as to cider and fruit juices, by making some uniform provision for a fixed alcoholic content.

The recommendations also included an increase of the prohibition agents, further access to records of wholesale and retail dealers, prohibition of independent denaturing plants, more latitude for Federal searches and seizures; more effective procedure in padlock injunction cases; modification of the Volstead act and its amendments, and provision of a mode of prosecuting petty offences in the Federal courts without trial by jury.

THE PROHIBITION CONTROVERSY

Divergent Views by Individual Members.—Further trial of enforcement was favored by the following members: George W. Wickersham, Chairman; William I. Grubb, William S. Kenyon, and Paul J. McCormick. Modification of the eighteenth amendment was favored by the following: Henry W. Anderson, Ada L. Comstock, Frank J. Loesch, Kenneth Mackintosh, and Roscoe Pound. Outright repeal of the amendment was favored by Newton D. Baker and Monte J. Lemann. But Mr. Baker, while preferring repeal, showed his willingness to support the Commissioners who favored modification of the amendment.

The plan for liquor control proposed by Commissioner Anderson won unqualified support by two other members, and was favored as an alternative remedy by three more Commissioners; these, however, were of opinion that it should not be tried until prohibition should have had a fair and longer trial. The feature of the plan was that of a National Corporation under a bipartisan National Commission on Liquor Control, operating in those states which do not wish prohibition; with sales of liquor limited to persons holding license books, and restricted as to prices carefully graduated to keep bootleggers out of business. The plan proposes safeguards against transfer to improper use of permit books which would be cancelled for any infringement of the laws or regulations. The plan would protect states that elect to continue prohibition against liquor shipments from without and against illegal production in adjoining states.

President Hoover's Attitude.

In transmitting the report to Congress, the President declared himself in accord with the majority view that the Eighteenth Amendment should not be repealed, and expressed himself in unity with the spirit of the report in "seeking constructive steps to advance the national ideal of eradication of the social and economic and political evils of this traffic, to preserve the gains which have been made, and to eliminate the abuses which exist, at the same time

facing with an open mind the difficulties which have arisen under this experiment." But he added: "I do, however, see serious objection to, and therefore must not be understood as recommending, the Commission's proposed revision of the Eighteenth Amendment, which is suggested by them for possible consideration at some future time, if the continued effort at enforcement should not prove successful. My own duty and that of all executive officials is clear, —to enforce the law with all the means at our disposal without equivocation or reservation."

Mr. Wickersham's Comment.

The report was generally well received by the drys, but sharply criticized by the foes of prohibition for its finding against repeal and for not being more clearcut, either wet or dry. Expressing surprise at this criticism, Chairman Wickersham stated March 12, before the Boston Chamber of Commerce, that he interpreted the report as containing more comfort for the wets than for the drys. "In the past," Mr. Wickersham said, "there was much wellfounded complaint of the extreme intolerance of the prohibitionists. This peculiar characteristic of late appears to have been appropriated by their opponents." He said the report frankly acknowledged the evils which had grown under prohibition, but he would point out, nevertheless, the "great achievement" of the abolition of the legalized saloon; for this reason "it can hardly be wondered that the first of the conclusions reached by the Commission was that repeal of the Eighteenth Amendment is not advisable."

Action on the Report.—Congress made an added appropriation for the Prohibition Bureau, to enable it to increase the number of prohibition agents from 1400 to 1900, which became effective July 1. Beyond this the recommendations of the Commission were not acted upon, except that Senator Copeland's bill to repeal the provision limiting physicians' prescriptions and abolishing the requirement to specify for whom prescribed, was defeated in the Senate, Feb. 3.

I. AMERICAN POLITICAL HISTORY

This followed the announcement, Jan. 27, by Dr. James M. Doran, Director of the Bureau of Industrial Alcohol, that the requirement for physicians to specify on the stub of liquor permits for a permanent record, the nature of the ailment for which whisky or permissive liquor is prescribed, had been dispensed with.

POLICY OF ENFORCEMENT

Col. Amos W. W. Woodcock, Prohibition Director, in testimony submitted to the Senate Feb. 20, declared that he did not favor the use of large amounts of money or the armed forces of the United States to enforce prohibition; on the other hand, he urged steady pressure for enforcement without spectacular "drives" to bring about this end. In a statement June 6, Col. Woodcock defined saloons and speakeasies as the "obvious objective" of the dry forces, along with the large commercial violators, saying that he felt that the 500 new agents would make headway against them. Reviewing, June 20, his first year in office, he called attention to more strict observance by prohibition agents of the orders relative to use of firearms, saying that the weapons were restricted to self-defense. On July 2, he pointed out the confusion arising from the fact that the Eighteenth Amendment itself contemplates enforcement by Federal and state laws, but added that "all but five states have laws in respect to its enforcement, and all of these five have some law applicable to the prohibition of the traffic in liquor." He expressed appreciation of the cooperation accorded by the states, including those without enforcement laws, paying a special tribute to the work of the courts, police, and state constabulary.

ENFORCEMENT RESULTS

A summary of the first year's effort by the Prohibition Bureau under the jurisdiction of the Department of Justice was published Oct. 4, as follows: "Agents of the Bureau arrested 62,902 alleged violators of the Volstead Act. They seized 21,373 distilleries and stills. They confiscated

38,158,431 gallons of beer, spirits, wine and mash. They prosecuted 59,805 cases in the courts, and succeeded in obtaining convictions in as many as 85.9 per cent of them."

"WINEBRICK" AGITATION

As a consequence of contentions by wets that the sale of fruit concentrates, from which wines might be readily made at home, was allowable under the Volstead Act, and of the recommendation by the Wickersham Commission that this clause be stricken from the law, Senator Shepard, co-author of the Volstead Act, offered a bill to repeal the provision, Feb. 25, and in December, on the reconvening of Congress, renewed his urgency in its behalf. Col. Woodcock in a letter to the Crusaders Society, April 13, stated that fruit concentrates or "winebricks," if "intended" for intoxicating beverages, were illegal; but he emphasized the difficulty of proving such "intent." Col. Woodcock reported prosecutions under way against such enterprises in Los Angeles and Kansas City, adding that prosecution would follow whenever the evidence of unlawful intent permitted.

PROHIBITION AND "HARD TIMES"

The economic keynote of the "drive" for repeal or modification was sounded by the Executive Council of the American Federation of Labor when it urged, Oct. 8, a change in the dry law to admit manufacture and sale of beer and wine. "Through the modification of the Volstead Act there would be a tremendous spending of money," the Council declared, "not in charity but for materials and in payment of wages." Secretary of Agriculture Hyde made a progress report, Oct. 2, on the investigation undertaken as to the effect, whether good or bad, that legalization of beer might have on the farmer and farm industries. The Women's Christian Temperance Union had denied, Feb. 13, the wet claim that repeal of prohibition would put 2,000,000 men to work, citing figures embodied in the Congressional Record, Dec. 22, 1914,

THE PROHIBITION CONTROVERSY

by wet debaters on Constitutional Prohibition, that there were only 498,901 persons engaged in the liquor traffic in that year, which recorded the "greatest liquor traffic the country ever saw." Also, the Executive Committee of the National Grange, comparing 1929 with 1917, reported an increase by 242.7 pounds per capita in terms of milk equivalent, including butter, milk, and cream, cheese, condensed and evaporated milk and ice cream, saying: "The grain required to produce the increased quantities of these dairy products amounts to 10,067,198,000 pounds; this is approximately three times as much grain as was used all told in the manufacture of fermented liquors in 1917." The Grange estimated that this increase would be lost by resumption of brewing, and noted: "Present conditions in Germany and in England, or in South America, where liquor is plentiful, prove conclusively that beer is by no means a cure-all for social, economic, and industrial ills."

The American Legion in convention Sept. 24, voted disapproval of the Eighteenth Amendment and Volstead Act, calling on Congress for a referendum to the states on the issue of repeal or modification. The National Committee for Modification of the Volstead Act, sponsored by the American Federation of Labor, declared, Sept. 29, that it was impossible to overemphasize the action in protest against prohibition taken by the American Legion, American Bar Association, and the American Medical Association, adding: "The issue has ceased to be whether we are to have a change from the present prohibition statutes; the issue is whether we are to have modification or repeal." Supporting the demands of these associations Henry H. Curran, President of the Association against the Eighteenth Amendment, announced Oct. 5, that it would request both major political parties to include planks in their national platforms pledging their Senators and Representatives in the next Congress to adopt a resolution of submission.

Bradstreet's published, Nov. 7, a survey of business sentiment recording a majority opposed to prohibition, as follows: Out of the total replies, 55 per cent voted yes, that repeal would help business; while about 14 per cent felt that modification of the law would produce the best results. On the other side, 24 per cent felt definitely that nothing in a business way would be gained by a change, and the remaining 7 per cent returned indefinite replies. A survey of Congressional sentiment was published, Nov. 5, by the Association against the Prohibition Amendment, which listed by name 170 Representatives and 27 Senators,—about two-fifths of the House and slightly more than one-fourth of the Senate—as favorable to resubmission of the Eighteenth Amendment to the states. A representative wet view of anti-prohibition progress was expressed by H. H. Atterbury, President of the Pennsylvania Railroad and a director of the Association against the Prohibition Amendment, commenting in a letter to *The New York Times*, Feb. 13, on what he termed a "common-sense editorial" appearing in that newspaper "advising against any undue optimism about the abolition of prohibition."

PROSPECTS OF PARTY ACTION

John J. Raskob, Chairman of the Democratic National Committee, announced, Nov. 22, a personal canvass by letter of 90,000 contributors to the national Democratic campaign in 1928, seeking their opinion as to the "expediency or advisability of the national convention making a positive decision on prohibition." One of the questions submitted was whether economic issues should be accentuated in 1932 and the platform remain silent on the prohibition question. As nearly half the contributors were from New York, Massachusetts, Pennsylvania, Illinois and New Jersey, and as the contributors in dry states of the South and West make up fewer than one-fourth of the total, dry Democrats predicted that Mr. Raskob's replies would probably fa-

I. AMERICAN POLITICAL HISTORY

vor a plank for repeal or modification. Up to this writing no report has been made on this questionnaire.

On the Republican side a letter to Sen. Simeon D. Fess, Chairman of the Republican National Committee, was made public Nov. 15 by former Sen. James W. Wadsworth, Jr., of New York, urging that the party's 1932 convention recommend to its members of Congress the submission to state conventions of an amend-

ment for repeal. Senator Fess was then reported as wishing official party approval of the Eighteenth Amendment, in support of President Hoover.

Leaders of both major parties in Congress announced their assent, Dec. 1, to the first record vote since the Eighteenth Amendment and the Volstead Act went into effect in 1921, to be taken at some time during the current session.

THE ELECTIONS OF 1931

BY THOMAS N. HOOVER

PROFESSOR, OHIO UNIVERSITY

MEMBERS OF HOUSE OF REPRESENTATIVES

Mortality of Members-elect.—

The importance of the 1931 elections has been quite out of proportion to the number of elections held. The members sent to the House of Representatives in the Seventy-second Congress were elected in September and November, 1930. Unfortunately,

there is no guarantee that a person elected at that time would be alive on the first Monday in December, 1931, to take part in the organization of the House.

Since the election a year ago, vacancies occurred in thirteen congressional districts, in each case by reason of death. The following is the mortality list, and successors:

Representatives	Died	Successor
John F. Quayle, seventh New York.....	Nov. 27, 1930	Matthew V. O'Malley
David J. O'Connell, ninth New York.....	Dec. 29, 1930	Stephen A. Rudd
Henry Allen Cooper, first Wisconsin.....	Mar. 1, 1931	Thomas R. Amlie
James B. Aswell, eighth Louisiana.....	Mar. 16, 1931	John H. Overton
Nicholas Longworth, first Ohio.....	Apr. 9, 1931	John B. Hollister
Matthew V. O'Malley, seventh New York.....	May 26, 1931	John J. Delaney
Charles A. Mooney, twentieth Ohio.....	May 29, 1931	Martin L. Sweeney
George S. Graham, second Pennsylvania.....	July 4, 1931	Edward L. Stokes
Charles G. Edwards, first Georgia.....	July 13, 1931	Homer C. Parker
Bird J. Vincent, eighth Michigan.....	July 18, 1931	Michael J. Hart
Samuel C. Major, seventh Missouri.....	July 28, 1931	Robert D. Johnson
Ernest R. Ackerman, fifth New Jersey.....	Oct. 18, 1931	Percy H. Stewart
Fletcher Hale, first New Hampshire.....	Oct. 22, 1931	Vacancy
Harry M. Wurzbach, fourteenth Texas.....	Nov. 6, 1931	Richard M. Kleberg

Elections By States.—The following election statistics were made possible by the kindly assistance of the Secretaries of State of the states concerned:

7th Missouri District (Election Sept. 29, 1931)	
Robert D. Johnson, Dem.....	27,277
John W. Palmer, Rep.....	18,156
L. L. Collins, Anti-Prohib.....	3,828
8th Michigan District (Election Nov. 3, 1931)	
Michael J. Hart, Dem.....	25,823
Foss O. Eldred, Rep.....	20,641
John G. Zittel, workers.....	292
1st Ohio District (Election Nov. 3, 1931)	
John B. Hollister, Rep.....	51,304

David Lorback, Dem.....	31,633
Robert A. Dunderstadt, Prog.....	2,264
20th Ohio District	
Martin L. Sweeney, Dem.....	34,671
D. Hadyn Parry, Rep.....	14,024
2nd Pennsylvania District	
Edward L. Stokes, Rep.....	34,059
Charles S. Hill, Dem.....	1,758
John W. Edelman, Soc.....	175
7th New York District	
John J. Delaney, Dem.....	24,587
Wm. L. Padgett, Rep.....	7,840
Abraham Zucker, Soc.....	2,724
J. L. Engdahl, Com.....	122
5th New Jersey District	
Percy H. Stewart, Dem.....	31,473
Donald H. McLean, Rep.....	29,668
Alexis L. Clark, Prohib.....	2,528
Harry F. Kopp, Soc.....	193
Morris Langer, Com.....	113

THE GEORGE WASHINGTON BICENTENNIAL

Statistics in the other Congressional elections were not available.

Democratic Speaker.—In two of the districts, viz. the 8th Michigan, and the 5th New Jersey, Democrats were returned in place of Republicans. This gave the Democrats the control of the House, and the Speakership to Representative John N. Garner, Democrat, of Texas. About all the comfort the Republicans had out of these elections was the election of John B. Hollister as successor to Nicholas Longworth, from the 1st Ohio, by a majority many times greater than that given to the former speaker a year ago.

SENATE

Vacancies Filled.—In the Senate were three vacancies, all filled since the adjournment of the Seventy-First Congress. On March 31, 1931, Warren R. Austin was elected Senator to fill the unexpired term of the late Senator Frank L. Greene, of Vermont. Senator Austin is a Republican.

The vacancy caused by the death of Dwight W. Morrow, New Jersey Senator elected in November, 1931, was filled temporarily by Governor Larson in the appointment of W. Warren Barbour, Republican.

The death of Senator T. H. Caraway of Arkansas caused a vacancy which was filled by Governor Parnell's appointment of Mrs. Hattie Caraway, widow of the late Senator, and a Democrat. Mrs. Caraway is the first of her sex to serve actively in the Senate.

Republican Majority.—As this is being written the Republicans have a slight majority in the Senate, but all Republicans are not supporting Senator Moses for President Pro-tem.

Some of the Senators have a memory of something about "sons of wild Jackasses.

GOVERNORS

Kentucky.—The Democrats won a sweeping victory. The votes follow:

Ruby Laffoon, Dem.....	438,513
William B. Harrison, Rep.....	366,982
Herman Horning, Soc. Lab.....	1,148
John J. Thobe, Soc.....	1,163

New Jersey was another scene of Democratic victory:

A. Harry Moore, Dem.....	735,504
David Baird, Jr., Rep.....	505,451

AMENDMENTS

Ohio.—A measure sponsored by Governor White for a \$7,500,000 bond issue for state welfare work was overwhelmingly rejected.

Kentucky.—Two constitutional amendments in Kentucky were rejected. One would permit additional indebtedness for school purposes. The other was for a state constitutional convention.

New York.—The Reforestation Amendment sponsored by Governor Roosevelt, but opposed by former Governor Smith, was carried.

MUNICIPAL ELECTIONS

Cleveland.—The voters put an end to the City Manager plan, and restored the former Mayor-Council system. The election of Mayor will be January 12, 1932.

Massillon, O.—"General" Jacob S. Coxey, leader of the famous march to Washington thirty-seven years ago, now seventy-seven years of age, was elected mayor of his home city of Massillon, O., over his Democratic opponent, Fred W. Justis.

THE GEORGE WASHINGTON BICENTENNIAL

By ALBERT BUSHNELL HART

HISTORIAN OF THE U. S. GEORGE WASHINGTON BICENTENNIAL COMMISSION

Washington's Two Hundredth Birthday.—A dramatic incident in the activities of the American peo-

ple in 1931 was the observance on a very wide scale of the approaching Two Hundredth Birthday of George

I. AMERICAN POLITICAL HISTORY

Washington in 1932. It is a part of a striking continuance of interest in a great historical character lasting through six generations. The reputation of George Washington was national and was assured from the time of his appointment as commander-in-chief of the Revolutionary Forces in 1775 to the present day. His name is known round the globe. Statues and public squares and even cities are named for him in foreign countries. He is an acknowledged world figure.

Public Interest.—Hence it has been easy to interest Americans in the Two Hundredth Anniversary of Washington's Birth, not only public men and historians, but the people at large. In fact difficulty has been found in organizing public ceremonies on the grounds that everybody already knows everything about George Washington. This interest has for decades been shown by the immense Washington literature. In the Library of the British Museum are entered over 500 titles of separate works relating to Washington. More than 1500 such titles are entered in the Library of Congress, including sermons and addresses. The number of formal biographies is not less than forty or fifty, all the way from the deification of Washington by Parson Weems to the recent would-be destructive biographies in too many volumes. Inasmuch as the early biographers, particularly Marshall, flattened out the appreciation of Washington by dealing chiefly with the general and the statesman and leaving out his intensely human characteristics, this Washington-minus school of debunking biography feels it a duty to break down if possible the popular belief that Washington was simultaneously good and great, and insists that George Washington, especially as a young man, had a bad case of "inferiority complex."

ORGANIZATION OF THE BICENTENNIAL COMMISSION

Personnel.—The movement for a national bicentennial celebration was brought to a point in 1924 by an act of Congress providing for a

United States George Washington Bicentennial Commission which should cooperate with similar state commissions in a grand national celebration. The Commission included four of the most powerful senators and four of the most powerful representatives in Congress, the Vice-President, the Speaker of the House, and the President of the United States as official chairman. Eight additional members were appointed from civil life. An Executive Committee was appointed under the chairmanship of Senator Simeon D. Fess, Vice-chairman, who gave it much attention throughout. William Tyler Page, Clerk of the House, was made Executive Secretary. In 1927 Albert Bushnell Hart was made historian and therefrom devoted himself to the historical side of the enterprise. To provide an active executive and staff, in 1930 Representative Sol Bloom and Col. U. S. Grant, 3d, were appointed Associate Directors, but Col. Grant was heavily loaded with other official duties in Washington and resigned. Representative Bloom remained as the active executive spirit of the enterprise.

Local Commissions.—The original expectation was that the national commission would come into close relations with the state commissions; every state but one, and the District of Columbia, eventually appointed commissioners, but they were slow in getting into operation. Some of the state commissions have issued publications and Washington literature and have participated in public meetings and other demonstrations. The cities of Boston and Kansas City formed active local commissions. The work of making Washington better known has been carried on chiefly by the national commission.

PRESIDENTIAL ADDRESSES

In 1927 President Coolidge delivered an address in the hall of the House of Representatives on the *Birth of George Washington*, and President Hoover as chairman was scheduled to make the culminating

THE GEORGE WASHINGTON BICENTENNIAL

address under the auspices of the Commission on Feb. 22, 1932.

WASHINGTON ANNIVERSARY LITERATURE

Writings of George Washington.—The original appropriation bills of Congress provided chiefly for publishing enterprises, by far the most important of which is the Definitive Edition of the *Writings of George Washington* which is expected to extend to not less than twenty-five volumes. The possessors of Washington autograph letters have almost without exception permitted photostats to be taken of their treasures; but the larger part of the Washingtoniana was already in the Library of Congress. John C. Fitzpatrick was appointed Editor of the *Writings*, and the work has proceeded rapidly. Congress has made provision for selling them at a low price, especially to libraries and public institutions, but owing to a kink in the statute none of the completed volumes has as yet come from the Government Printing Office.

General Orders and Diaries.—Besides the letters, which are much more numerous than in the two preceding editions, the definitive edition of the *Writings* includes in the order of their dates the General Orders, which have never been heretofore printed. The *Diaries* are not included in this series because they have been published in an excellent and recent edition. A full and searching analytical index, prepared by David M. Matteson is appended to each volume; and these will be combined into a general index volume for the series.

Washington Maps.—A second literary enterprise of great import is Washington's geographic record. In the number of the *National Geographic Magazine* for January, 1932 there appeared an excellent map, showing highways and places known to have been used and visited by Washington. Another geographical enterprise is the *Washington Atlas* prepared under the direction of Col. Lawrence Martin, Chief of the Maps Division of the Library of Congress,

containing facsimiles of maps made by Washington and an independent list of places. For both the *Writings* and the *Atlas* the method has been followed of appointing advisory committees of experts, in addition to regional geographical committees in which every state visited by Washington is represented.

Honor Pamphlets.—A third literary development is the *Honor to George Washington Pamphlets*, of which a series has been prepared in the office of the Commission under the editorship of the historian. It has been issued in several forms, first individual numbers, and then a small-type edition of all the numbers.

Washington Programs.—Alongside the *George Washington Pamphlets* another series has been issued under the title of *Programs*, under the editorship of Mrs. John Dickinson Sherman, a member of the Federal commission, which is embodied in twelve pamphlets intended to make it easy for societies and chapters and schools to further a knowledge of the social and family life of Washington and to serve as material for papers and dramatic productions. The programs and the pamphlets contain a variety of material taken from Washington's own writings.

OTHER ANNIVERSARY ACTIVITIES

The office of the associate director has been a center of activity in arousing the fellow countrymen of Washington to a sense of his national significance. An official portrait of Washington was selected and facsimiles of that and other portraits have been sent out. A full-sized reproduction of Stuart's Athenaeum portrait of Washington has been offered to every school room in the United States. Busts of Washington have been reproduced in plaster from the best originals and have been sent out widely. Pamphlets and suggestions have been issued for business firms and department stores. Considerable parts of the publications of

I. AMERICAN POLITICAL HISTORY

the Commission have been set up in braille for the blind people. Great attention has been paid to encouragement of motion pictures to be distributed to schools, clubs and organizations. Bicentennial medals have been distributed. A set of twelve bicentennial Washington stamps have been issued by the United States Government, and a special quarter dollar coined. Special music has been written and publications have been issued of the music of Washington's time. Lists and suggestions have been sent out for pageants and plays staged in Washington's time. *A Handbook of the George Washington Appreciation Course* is intended especially for the

use of teachers. The exact titles of the various publications have been printed as Part V of the *George Washington Pamphlet No. 16—Classified Washington Bibliography*.

The result of these efforts to make the real George Washington better known by his countrymen should be felt for many years to come. The variety of publications and memorabilia meets the needs of many different elements of the population and will be a guide to the immense material relating to Washington, and especially to what George Washington himself wrote or said. No character in American history can better bear this searchlight of investigation and information.

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

(For further information, the reader may address the following organizations)

GENERAL

AMERICAN ANTIQUARIAN SOCIETY, Worcester, Mass.
AMERICAN HISTORICAL ASSN., 40 B Street S. W., Washington, D. C.
AMERICAN JEWISH HISTORICAL SOCIETY, 531 West 123rd Street, New York City.
AMERICAN NUMISMATIC SOCIETY, 156th Street at Broadway, New York City.
AMERICAN PROPORTIONAL REPRESENTATION LEAGUE, 1417 Locust Street, Philadelphia, Pa.
AMERICAN SCENIC AND HISTORIC PRESERVATION SOCIETY, 154 Nassau Street, New York City.
AMERICAN SOCIETY OF CHURCH HISTORY, 98 Mercer St., Princeton, N. J.
CANADIAN HISTORICAL ASSN., Ottawa, Canada.
HISPANIC SOCIETY OF AMERICA, 156th St., W. of Broadway, New York City.
HOLLAND SOCIETY OF NEW YORK, 90 West Street, New York City.
HUGUENOT SOCIETY OF AMERICA, 2 West 45th Street, New York City.
METHODIST HISTORICAL SOCIETY, 150 Fifth Ave., New York City.

MISSISSIPPI VALLEY HISTORICAL ASSN., Austin, Tex.
NEW ENGLAND HISTORIC GENEALOGICAL SOCIETY, 9 Ashburton Place, Boston, Mass.
AMERICAN BAPTIST HISTORICAL SOCIETY, Upland Avenue, Chester, Pa.
AMERICAN IRISH HISTORICAL SOCIETY, 132 East 16th St., New York City.
NORTHWESTERN ASSN. OF HISTORY, Government and Economic Teachers, Spokane, Wash.
PRESBYTERIAN HISTORICAL SOCIETY, 520 Witherspoon Building, Philadelphia, Pa.
SOCIETY FOR THE PRESERVATION OF NEW ENGLAND ANTIQUITIES, 2 Synde Street, Boston, Mass.
STEUBEN SOCIETY OF AMERICA, 369 Lexington Ave., New York City.
THOMAS PAINE NATIONAL HISTORICAL ASSN., 50 West 47th Street, New York City.
UNITED STATES CATHOLIC HISTORICAL SOCIETY, New York City.
WOODROW WILSON FOUNDATION, 6 East 39th Street, New York City.

POLITICAL

LEAGUE FOR INDEPENDENT POLITICAL ACTION, 52 Vanderbilt Ave., New York City.

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

LEAGUE FOR INDUSTRIAL DEMOCRACY, 70 Fifth Ave., New York City.	NATIONAL REPUBLICAN COMMITTEE.
NATIONAL DEMOCRATIC COMMITTEE.	WOMEN'S NATIONAL DEMOCRATIC CLUB, Inc., Central Park West and 61st Street, New York City.
NATIONAL LEAGUE OF WOMEN VOTERS, 532 17th St. N. W., Washington, D. C.	WOMEN'S NATIONAL REPUBLICAN CLUB, 6 East 37th Street, New York City.
NATIONAL MUNICIPAL LEAGUE, 261 Broadway, New York City.	

DIVISION II

INTERNATIONAL SITUATIONS AFFECTING THE UNITED STATES

FOREIGN SERVICE OF THE UNITED STATES

BY HERBERT C. HENGSTLER

CHIEF, DIVISION OF FOREIGN SERVICE ADMINISTRATION, DEPARTMENT OF STATE

GROWTH AND DEVELOPMENT OF THE SERVICE

Consular.—From the time when Benjamin Franklin was commissioned as the first Minister Plenipotentiary of the United States of America in 1778 and Col. William Palfrey was commissioned as the first Consul in 1780, efforts have from time to time been put forth to improve the Foreign Service of the United States. Little progress, however, was made until 1856 when Congress enacted legislation effecting various improvements in the Consular Service. No further general legislation was enacted until April 5, 1906 when the act for the reorganization of the Consular Service was passed. In 1895 President Cleveland, by executive order, provided for examinations (non-competitive) for persons selected for appointment to a portion of the consulates then maintained. However, selections for appointment were still individual. The Act of 1906 and Executive Orders issued by President Roosevelt at that time placed the Consular Service on a merit basis.

Classification.—This was followed Feb. 5, 1915 by an Act classifying diplomatic secretaries and consular officers, providing for their appointment to classes rather than to posts. The next important step forward was that of May 24, 1924, known as the Rogers Act, which amalgamated the two branches, diplomatic and con-

sular, into one Foreign Service, all officers being available for service in either diplomatic or consular offices and sharing equally in opportunity for promotion on their efficiency.

New Legislation.—While the Rogers Act was of the greatest value in building up an efficient career service and in establishing a valuable morale, it did not contain many things which experience in its administration indicated were essential. The Congress gave much consideration to the subject and as a result the latest advance step, known as the Moses-Linthicum Act, became law on February 23, 1931. The major improvements made by the law are (1) classification and merit system for clerical employees; (2) establishment of a Board and a Division of Foreign Service Personnel with carefully prescribed duties to insure impartial administration and promotions; (3) establishment of central disbursing and accounting offices; (4) maximum and minimum salary ranges in various classes; (5) statutory authorization for post and representation allowances; (6) cumulation of leave; (7) retirement at discretion of officer after service of 30 years.

FOREIGN SERVICE ADMINISTRATION

Regulations.—In connection with the Foreign Service Act of Feb. 23, 1931, the administrative regulations embodied in Executive Orders (Nos.

FOREIGN SERVICE OF THE UNITED STATES

5642/4, June 8, 1931) are of special importance. These regulations give practical effect to some of the chief purposes of the act. They set up machinery whereby it is put into operation by providing for a Board of Foreign Service Personnel, a Board of Examiners, a Foreign Service Officers' Training School, and a Foreign Service Officers' Training School Board.

Board of Foreign Service Personnel.—The duties of this board are to examine into the character, ability, efficiency, experience, and general availability of all members of the Service with a view to promotions, transfers, and separations; to consider controversies or delinquencies among Service personnel; and to recommend those officers, who have shown special capacity, for promotion to the grade of minister. The Board is composed of not more than three Assistant Secretaries of State, one of whom shall be the Assistant Secretary having supervision over the Division of Foreign Service Personnel, who shall be chairman. The Chief of the Division of Foreign Service Personnel and one other member of the division may attend the meetings of the board, but are not entitled to vote in its proceedings.

The Board of Examiners.—The duties of the Board are to formulate rules for, to determine the scope and method, and hold examination of applicants for commission to the Foreign Service, and to determine those who are fitted for appointment. The examinations, which shall be both written and oral, are open only to Americans of good standing between the ages of 21 and 35 specially designated by the President for examination, who have been citizens of the United States for at least fifteen years. American clerks and employees in the Foreign Service are granted certain exceptions concerning age and may be exempted by the Board from the written examinations. The Board is composed of not more than three Assistant Secretaries of State designated by the Secretary of State, the

Chief of the Division of Foreign Service Personnel, and the Chief Examiner of the Civil Service Commission.

THE FOREIGN SERVICE OFFICERS' TRAINING SCHOOL

Purposes.—The purpose of this school is to provide a term of instruction in the Department of State as a period of probation for those successfully passing the examinations given by the Board of Examiners, and to judge, during this period, the new appointees to the Service, as to their qualifications for advancement and assignment to duty as a Foreign Service officer. The governance of the school is to be set forth in rules and regulations prescribed by the Secretary of State. The school is under the direction of the Foreign Service School Board.

The Foreign Service School Board.—The duties of the Board are to act in all matters concerning the functions of the school with the approval of the Secretary of State; to select the director of the School from among the officers of the Foreign Service with the approval of the Secretary of State; and in its discretion to select other instructors from among the qualified officers of the Department of State, the Foreign Service, the executive departments of the Government, and other available sources. The Board is composed of the Assistant Secretaries of State composing the Board of Foreign Service Personnel, one Foreign Service officer assigned for duty in the Division of Foreign Service Personnel, and the director of the School.

FOREIGN SERVICE PERSONNEL

Changes.—During 1931, 414 persons took the written examinations for appointment to the United States Foreign Service. Two hundred and thirty-four presented themselves for the oral examination. Sixty-seven passed the examination. Sixteen women took the written examination, and ten took the oral. None of the

II. INTERNATIONAL SITUATIONS AFFECTING THE U. S.

women was successful in the examination.

Promotion from Ranks.—Since 1925, when the policy was formulated of promoting outstanding officers of the Service to the grade of Minister and Ambassador instead of recruiting them from civil life alone, there have been marked advances. During 1931, twenty-one of the ministers and six of the ambassadors representing the United States in foreign countries had been drawn from the ranks of the Foreign Service. And in addition, the Minister Resident and Consul General at Ethiopia, the Diplomatic Agent and Consul General at Tangier, Morocco, and the Chargé d'Affaires at Iraq, were Foreign Service officers.

Losses to the Service.—During 1931 there have been three deaths, three retirements, and ten resignations from the Foreign Service. The number of resignations is less than half of that for the corresponding period in 1930. At present the Service totals 704 career officers.

CLASSIFICATION, FOREIGN SERVICE, 1932

	Salary	Number Provided for 1932
Heads of Missions		
Ambassadors.....	\$17,500	15
Ministers.....	12,000	2
Ministers.....	10,000	36
Diplomatic Agent and Consul General.....	7,500	1
Foreign Service Officers		
Class 1.....	\$9,000—\$10,000	35
Class 2.....	8,000— 8,900	36
Class 3.....	7,000— 7,900	47
Class 4.....	6,000— 6,900	61
Class 5.....	5,000— 5,900	68
Class 6.....	4,500— 4,900	89
Class 7.....	4,000— 4,400	93
Class 8.....	3,500— 3,900	57
Unclassified.....	3,000— 3,400	52
do.....	2,750— 2,900	60
do.....	2,500— 2,700	177
Clerks—Senior		
Class 1.....	\$4,000	2
Class 2.....	3,750	3
Class 3.....	3,500	16
Class 4.....	3,250	9
Class 5.....	3,000	69
Clerks—Junior		
Class 1.....	\$2,750	73
Class 2.....	2,500	194
Class 3.....	\$120—\$2,250	1731

DIPLOMATIC PERSONNEL

AMBASSADORS

ACCREDITED BY UNITED STATES

ACCREDITED TO UNITED STATES

Argentina	Robert Woods Bliss	1927	Señor Dr. Felipe A. Espil	1931
Belgium	Hugh S. Gibson	1927	Paul May	1931
Brazil	Edwin V. Morgan	1912	R. de Lima e Silva	1931
Chile	William S. Culbertson	1928	Señor Don Miguel Cruchaga Tocornal	1931
Cuba	Harry F. Guggenheim	1929	Señor Don Orestes Ferrara	1926
France	Walter E. Edge	1929	M. Paul Claudel	1927
Germany	Frederic M. Sackett	1930	Herr Friedrich W. von Prittwitz und Graffron	1928
Great Britain	Charles G. Dawes	1929	The Honorable Sir Ronald Lindsay	1930
Italy	John W. Garrett	1929	Nobile Giacomo de Martino	1925
Japan	W. Cameron Forbes	1930	Katsuji Debuchi	1928
Mexico	J. Reuben Clark, Jr.	1930	Señor Dr. Don José Manuel Puig Casauranc	1931
Peru	Fred Morris Dearing	1930	Señor Don Manuel de Freyre y Santander	1930
Poland	John N. Willys	1930	Tytus Filipowicz	1930
Russia			Serge Ughet, Financial Attaché	1929
Spain	Irwin B. Laughlin	1929	Señor Don Salvador de Madariaga	1931
Turkey	Joseph C. Grew	1927	Ahmet Muhtar	1927
Union of Soviet Socialist Republics	No Diplomatic Relations			

FOREIGN SERVICE OF THE UNITED STATES

MINISTERS

ACCREDITED BY UNITED STATES

ACCREDITED TO UNITED STATES

Albania	Herman Bernstein	1930	Faik Konitza	1926
Austria	Gilchrist Baker Stockton	1930	Edgar L. G. Prochnik	1925
Bolivia	Edward F. Feely	1930	Señor Don Luis O. Abelli	1931
Bulgaria	Henry Wharton Shoemaker	1930	Simeon Radeff	1925
Canada	Hanford MacNider	1930	The Honorable William Duncan Herridge	1931
China	Nelson T. Johnson	1929	Hawking Yen (Chargé d'Affaires ad interim)	1931
Colombia	Jefferson Caffery	1928	Señor Dr. Don Fabio Lozano	1931
Costa Rica	Charles C. Eberhardt	1930	Señor Don Guillermo E. González (Chargé d'Affaires ad interim)	1931
Czechoslovakia	Abraham C. Ratchesky	1930	Ferdinand Veverka	1928
Danzig, Free City of	C. Warwick Perkins, Jr. (Consul, in charge)	1929		
Denmark	North Winship (Chargé d'Affaires ad interim)	1931	Otto Wadsted	1930
Dominican Republic	H. F. Arthur Schoenfeld	1931	Señor Roberto Despradel	1931
Ecuador	William Dawson	1930	Señor Dr. Don Homero Viteri Lafronte	1929
Egypt	William M. Jardine	1930	Sesostris Sidarouss Pasha	1931
El Salvador	Charles B. Curtis	1931	Señor Dr. Don Carlos Leiva	1931
Estonia	Frederick W. B. Coleman	1922	Colonel Victor Mutt, Consul General in New York City in charge of Legation	1927
Ethiopia	Addison E. Southard	1927		
Finland	Edward E. Brodie	1930	L. Åström	1922
Greece	Robert P. Skinner	1926	Charalambos Simopoulos	1924
Guatemala	Sheldon Whitehouse	1929	Señor Dr. Don Adrian Reinos	1930
Haiti	Dana G. Munro	1930	Dantès Bellegarde	1931
Honduras	Julius G. Lay	1929	Señor Dr. Don Céleo Dávila	
Hungary	Nicholas Roosevelt	1930	Count László Széchenyi	1922
Iraq	Alexander K. Sloan (Chargé d'Affaires ad interim)	1931		
Irish Free State	Frederick A. Sterling	1927	Michael MacWhite	1929
Latvia	Frederick W. B. Coleman	1922	Arthur B. Lule (Consul General, New York)	1927
Liberia	Charles E. Mitchell	1930		
Luxemburg	Hugh S. Gibson	1927	Baron Raymond de Waha (Chargé d'Affaires)	1920
Lithuania	Frederick W. B. Coleman	1922	Bronius Kasimir Balutis	1928
Monaco	Robertson Honey (Consul, in charge)	1929		
Morocco	Maxwell Blake (Diplomatic Agent)	1927		
Netherlands	Laurits S. Swenson	1931	J. H. van Royen	1927
Nicaragua	Matthew E. Hanna	1929	Señor Dr. Don Juan B. Sacasa	1929
Norway	Hoffman Philip	1930	Halvard H. Bachke	1929
Palestine	Paul Knabenshue (Consul General, in charge)	1928		
Panama	Roy T. Davis	1929	Señor Dr. Harmodio Arias	1931
Paraguay	Post Wheeler	1929	Señor Don Pablo M. Ynsfran (Chargé d'Affaires a.i.)	1929
Persia	Charles C. Hart	1929	Yadollah Azodi (Chargé d'Affaires)	1931
Portugal	John Glover South	1929	Viscount d'Alte	1902
Rumania	Charles S. Wilson	1928	Charles A. Davila	1929
San Marino	Joseph E. Haven (Consul, in charge)	1925		
Siam	David E. Kaufman	1930	Major General Prince Amoradat Kridakara	1929
Sweden	John Motley Morehead	1930	W. Boström	1926
Switzerland	Hugh R. Wilson	1927	Marc Peter	1920
Syria	Herbert S. Goad (Consul General, in charge)	1930		
Union of South Africa	Ralph J. Totten	1930	Eric Hendrik Louw	1929
Uruguay	J. Butler Wright	1930	Dr. J. Varela	1920
Venezuela	George T. Summerlin	1929	Señor Dr. Don Pedro Manuel Arcaya	1930
Yugoslavia	John Dyneley Prince	1926	Dr. Leonide Pitamic	1929

II. INTERNATIONAL SITUATIONS AFFECTING THE U. S.

UNITED STATES TREATIES

BY DENYS P. MYERS

DIRECTOR OF RESEARCH, WORLD PEACE FOUNDATION

GENERAL

The treaty structure of the United States slowed up in 1931. A dozen treaties and conventions and 17 executive agreements were all that went into force from December, 1930, to December, 1931. Only some half a dozen were signed during the year. None except the London naval treaty of April 22, 1930, which went into force on January 1, was of particular importance or established a new direction to American international relations. The slowing up of treaty production may indicate that the country's postwar conventional relations are approaching either a condition of stability or of constitutional deadlock. In the 14 years from 1918 to 1931 the United States brought into force more than 200 treaties, approximately one-fourth of the number which it has perfected during its existence. Together they have brought the bilateral relations of the country up to date in a postwar sense.

MULTILATERAL TREATIES

Though four multilateral treaties were proclaimed in 1931, they were of that type which almost exclusively failed to receive prompt action in the Senate, while a number which were signed are retained in the Department of State awaiting a propitious time for the constitutional requirements of ratification. In the multilateral field, the London naval treaty was the most important addition to American international agreement.

BILATERAL TREATIES

The bilateral treaties which went into force in 1931 were all on different subjects and of the same character as previous treaties of their kind. They were: Convention on the prevention of smuggling of intoxicating liquors with Chile, signed May 27, 1930; treaty of arbitration with Italy, signed April 19, 1928; treaty of extradition

with Germany, signed July 12, 1930; convention for the preservation of the halibut fishery of the northern Pacific Ocean and Bering Sea with Canada, signed May 9, 1930, superseding a similar convention of 1923; treaty of friendship, commerce and consular rights with Austria, signed June 19, 1928, and supplementary agreement signed Jan. 20, 1931; and a special agreement for the arbitration of claims growing out of the detention of the motorships *Kronprins Adolf* and *Pacific* with Sweden, signed Dec. 17, 1930.

GREAT BRITAIN AND IRAQ

A document abnormal in form and novel in content is the convention and protocol on the rights of the United States and its nationals in Iraq signed at London Jan. 9, 1930, and in force from Feb. 24, 1931. The abnormality of form inheres in the fact that the engagement is really with Iraq but is made with Great Britain as well. The novelty of content lies in the transitional character of Iraq, which has been a mandate under Great Britain as mandatory and which in 1932 is to receive a diploma of statehood and graduation into membership in the League of Nations. The United States claimed generally an undivided interest in mandated territories transferred to mandates under League of Nations supervision as a result of its contribution to the defeat of Germany and the latter's allies. Iraq formerly belonged to Turkey, with which the United States was not at war. With mandates, but not Great Britain as to Iraq, the United States has made a series of treaties securing for it the rights and benefits held and enjoyed by members of the League of Nations. No mandate was issued for Iraq; instead a treaty of alliance between Great Britain and Iraq of 1922, another treaty of 1926, two resolutions of the League Council and sundry

ancillary documents established the regime from which Iraq is emerging. The convention of the United States made in 1930 registers "consent to the régime established" by the above documents, recognizes "the special relations existing" between Great Britain and Iraq and defines the rights of the United States and its nationals under the terms of the decisions and treaties, which are scheduled as part of the convention itself. The convention has the effect of technical recognition of Iraq in its present and future status.

PROTECTION OF INDUSTRIAL PROPERTY

The revision of the international convention for the protection of industrial property, effected at The Hague Nov. 6, 1925, finally was brought into force for the United States on Jan. 22, 1931. This fourth revision of the convention of 1883 maintains the Bern bureau as its central office, and is destined gradually to supersede its predecessors as new ratifications are added by the numerous states parties to the régime. Of a similar type is the Pan-American convention for trade-mark and commercial protection and registration of trade-marks, signed at Washington Feb. 20, 1929, and in force for some four states by deposit of ratifications with the Pan-American Union, a new feature of treaty management. An Inter-American Trade-Mark Bureau is established at Habana.

COMMERCIAL AVIATION

The Pan American convention on commercial aviation came into force on July 17 for the United States; Guatemala, Mexico, Nicaragua and Panama being other current parties. Since this convention was made at Havana in 1928 there has been debate as to whether it is likely to be as useful as the international air navigation convention of 1919, which has been pending before the Senate since 1926. The latter establishes a technical commission which keeps a full set of regulations up to date. An air navigation arrangement effected by exchange of notes became effective Oct. 31 with Italy, the first with any

European country. It is more complete and detailed than the earlier one with Canada, and contains a most-favored-nation clause. Negotiations for similar agreements are pending with several other countries.

HAITI

The most important change in international relations effected by executive agreement during the year is embodied in the Haitinization agreement of Aug. 5. By it substantially all the American services in that country and all control over its affairs ceased on Sept. 30. It marks the end of a chapter of national history.

MARITIME AFFAIRS

Agreements for relief from double income tax on shipping profits were made public with Brazil, Denmark and Iceland, France, Germany, Greece, Italy, Netherlands, and Norway, though the actual agreements were dated between 1922 and 1930. Other agreements relative to maritime affairs published during 1931 were with Estonia on mutual recognition of ship measurement certificates (1926), with Sweden on reciprocal exemption of pleasure yachts from all navigation dues (1930) and with Italy on reciprocal recognition of certificates of inspection of vessels assigned to the transportation of passengers (1931); with Japan on reciprocal recognition of load-line certificates (1931).

PERSIA

Important agreements made in 1928 with Persia were made public dealing with commercial relations and with personal status and family law jurisdiction of American nationals in Persia and of Persian nationals in the United States. In 1928 Persia divested itself of capitulatory restrictions and made a series of temporary commercial arrangements and establishment agreements with numerous states formerly claiming special privileges.

PENDING CONVENTIONS AND TREATIES

Arms and Ammunition.—The President in a special message of Dec.

II. INTERNATIONAL SITUATIONS AFFECTING THE U. S.

10 mentioned a number of international conventions on which there has been delay in the Senate and on which some responsibility is involved. The convention for the supervision of the international trade in arms and ammunition of 1925 was revised at that time because its predecessor of 1919 had not proved satisfactory to the United States. The Senate received it in 1926, and in the meantime ratifications sufficient to bring it into force have been given, but other states are awaiting action of the United States, which is an important factor in the trade. The protocol for the prohibition in war of poisonous gases, a suggestion of the United States, has been lying as long. In 1914, following the *Titanic* disaster, a convention on safety of life at sea was signed and provided for the ice patrol of the north Atlantic, which has been conducted ever since solely on the responsibility of the United States. The 1914 convention never went into force, but it was superseded at London in 1929 by a greatly improved unification of standards of maritime safety.

Two Pan-American treaties signed at Havana at the sixth conference in 1928 await Senate action, one regarding consular agents and the other relating to maritime neutrality. More significant is the delay on the general treaty of inter-American arbitration, upon the acceptance of which depends, after 40 years of effort, the development of an adequate system of Pan-American pacific settlement. Signed at Washington in 1929, it and its companion convention on concilia-

tion marked a real step in advance by the United States. The conciliation convention was promptly passed by the Senate and is in force. The arbitration treaty, however, has lain untouched by the legislative body because the Senate hesitates to agree that arbitral submissions shall take place on the same basis as the rest of the world, by the executive government defining the subject of the arbitration.

TREATY POLICY

In the making of treaties the year 1931 had the characteristic noted as to those which entered into force—the new documents carried on and filled out the existing structure so far as bilateral affairs were concerned. Multilaterally, the policy was affected by the congestion in the Senate. Some of the most important work in international relations is now being done in general conferences, in which the United States participates freely. In recent years a number of significant conventions have been signed as a result of such participation and the practice continued through 1931, notably with respect to the convention for limiting the manufacture of narcotic drugs. The Department of State, however, in view of the congestion of multilateral conventions in the Senate, has not deemed it wise to add to the pile. It is better to submit a convention when there is a reasonable prospect of action upon it and, therefore, when its status can be more accurately defined with reference to the time of Senatorial consideration.

THE UNITED STATES AND WORLD AFFAIRS

By JOHN M. MATHEWS

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ALLIED DEBTS AND GERMAN REPARATIONS

The American Official Position.

—On account of the world-wide economic depression, the question of allied debts and German reparations

reached an acute stage during 1931. As pointed out in *THE AMERICAN YEAR BOOK*, 1930 (p. 54), the United States Government has officially held for the past ten years that there is no legal connection between debts

and reparations. This position was due to political considerations and was based on the assumption that the American people were averse to debt cancellation.

The Question of Cancellation.—Popular opposition to cancellation was based in part upon the reports of large military and naval expenditures by the allied governments. It was with this situation in mind that Edward N. Hurley, a member of the former War Debts Commission, proposed in January that we should allow a 50 per cent reduction in the debts due us on condition that the nations thus favored, as well as the United States, should agree to a somewhat commensurate reduction in their military and naval expenditures. Those nations, however, would probably resent an attempt on our part to control, even in this indirect way, the size of their military and naval forces.

Wiggin Stand on Debt Reduction.—At about the same time, Albert H. Wiggin, Chairman of the Board of the Chase National Bank of New York, in his annual report to the stockholders, came out strongly for a reduction of the debts. "Aside," he declared, "from the question of the justice of cancellation, I am firmly convinced that it would be good business for our government to initiate a reduction in these debts at this time."

Economic Factors.—The raising of our tariff rates through the passage of the Smoot-Hawley tariff law made it increasingly difficult for the allied nations to pay the annual installments of their debts. It is true that in previous years this difficulty has to some extent been overcome through invisible items which affect the balance of trade, such as the large sums of money annually spent by American tourists in Europe. The acute economic depression, however, cut down the number of such tourists in 1930 and to a still greater extent in 1931. Moreover, accompanying this depression occurred a world-wide fall in prices. In other words, the purchasing power of money was increasing, with the result that a debtor

who is bound to repay a fixed sum is really repaying considerably more in actual purchasing power. This situation naturally affected Germany and increased the burden upon her in the payment of reparations and thus upset the schedule of payments provided under the Young Plan. Upon the payment of reparations the allied powers largely depended for the payment of their debts to us. Germany was able to keep up the payment of reparations as long as she was able to borrow from abroad, and especially in the United States. Thus, in ultimate analysis the debts owed by the allied nations to the United States were being largely paid by American investors through German loans floated in this country. With the coming of the acute phase of the depression, however, the floating of German loans in the United States was no longer feasible, and the situation with reference to the payment of debts and reparations rapidly began to reach a crisis.

Foreign Criticism.—In spite of the admittedly close economic connection between debts and reparations, the United States Government continued during the first half of 1931 to maintain its position that technically and legally there is no connection. At the Sixth Congress of the International Chamber of Commerce at Washington in May criticism of our tariff and war debt policies was voiced by European delegates. President Hoover, in his address to the Congress, made no mention of these matters, but called attention to the large number of men under arms and the large sums of money being spent for the support of land armaments. Since such large armaments are maintained not by the United States but by the principal European nations who are debtors of the United States, his address was generally construed as an attempt to counteract criticism by Europeans of our war debt policy.

THE HOOVER MORATORIUM

Economic forces, however, and the logic of events gradually invalidated and undermined the policy of the

II. INTERNATIONAL SITUATIONS AFFECTING THE U. S.

United States Government to maintain that the question of war debts was closed by the funding agreements. In the face of a crisis which might not only have endangered the payment of debts and reparations, but also the payment of the large amount of debts owed by the German Government to private American investors, President Hoover finally acted and on June 20 issued his celebrated moratorium statement. (For full details of the Moratorium, see Professor Gerould's article, p. 23.)

THE UNITED STATES AND DISARMAMENT

Armament and War Debts.—As showing the interrelation between the major world problems in which the United States is involved may be mentioned the connection between the question of debts and reparations and that of disarmament. The maintenance by the allied nations of huge armaments is causing such a large drain upon their financial resources as to weaken their debt-paying ability. The economic depression is causing a greater strain upon the nations in keeping up both armaments and the payment of debts. In his moratorium statement, President Hoover remarked that while his proposal "has no bearing on the Conference for limitation of land armaments to be held next February, in as much as the burden of competitive armaments has contributed to bring about this depression, we trust that, by this evidence of our desire to assist, we shall have contributed to the good will which is so necessary to the solution of this major question." In his message to Congress in December, the President pointed out that "the burden of taxes to support armament is greater today than before the war, and the economic instability of the world is definitely due in part to this cause and the fears which these huge armaments at all times create."

American Cooperation.—For many years the United States has been vitally interested in the question of disarmament, as shown by the

prominent part which we took in the Washington, Geneva, and London naval conferences. Furthermore, we have cooperated with the League of Nations to probably a greater extent in connection with its disarmament activities than with any other. In 1926 the League established a Preparatory Commission for a Disarmament Conference and the United States has been continuously represented thereon by official delegates. Late in 1930 the Preparatory Commission succeeded in drawing up a skeleton Draft Convention for the World Disarmament Conference, called for February, 1932. By this Convention the powers agree "to limit and so far as possible" reduce armaments in accordance with the methods therein specified. The Convention represents the views of the majority of the nations represented in the Commission.

The Question of Budgetary Limitation.—The United States has heretofore favored the method of direct limitation of armaments. In addition to this, however, the other powers generally favor the indirect method of budgetary limitation, and this method is embodied in the Draft Convention. The United States has opposed this method on two grounds: First, because, on account of higher costs in this country, it would not permit the United States to attain parity; and secondly, because it would violate our Constitution to agree to budgetary limitation, in as much as that instrument gives to Congress the discretionary power to appropriate money without limit for the support of the army and navy. With reference to the first objection, it would seem that this difficulty could be overcome through making a compensatory allowance to the United States in order to equalize costs for purposes of comparison. The second objection is without merit, for we have hitherto entered into several treaties of undoubted constitutionality which limit, in the international sense, the discretionary power of Congress under the Constitution. Congress is under a moral obligation to observe such limitation,

but is not legally bound in the domestic sense. At all events, there is some evidence that our Government is weakening in its opposition to the method of budgetary limitation, and is willing to overlook its objection to this method if it will conduce to the success of the Disarmament Conference.

Disarmament Commission.—The Draft Convention also makes provision for a permanent disarmament commission which is to collect and disseminate information on the status of armaments and to report annually to the League Council. At first the United States objected to "any attempt to control, direct, investigate, or inquire within the territory of any party," but later withdrew its objection to the section of the Convention providing for the Disarmament Commission.

American Support of Disarmament Conference.—The United States was among the first nations to accept the invitation of the League of Nations to attend the World Disarmament Conference in February, 1932. The United States was also among the first nations to send to the League a statistical statement showing the present extent of its armaments to be used as a basis of negotiations at the Conference. The State Department at Washington is making elaborate preparations for American participation in the Conference. It was partly in the interests of the success of the Conference that Secretary of State Stimson made a trip to Europe during the summer, visiting Rome and other capitals.

Suspension of New Armament Programs.—At the League Assembly in September, Signor Grandi, Italian foreign minister, proposed a suspension of the execution of new armament programs until after the Disarmament Conference. This proposal for an armaments truce of one year was agreed to by the United States, except in the case of certain vessels for which contracts had been let.

French Demand For Security.—On the eve of the meeting of the Disarmament Conference, the principal danger to its success which looms

on the horizon is the insistence of France that she cannot disarm until she has ample security. France has consistently maintained for the past decade that security must precede disarmament, whereas the United States has been one of the principal proponents of the doctrine that disarmament is the best guarantee of security. We have not hitherto been willing to agree even to a consultative pact which might impliedly bind us to any course of action in case France should be attacked.

THE UNITED STATES AND THE LEAGUE OF NATIONS

During 1931 the United States has continued its policy of cooperating with the League in the promotion of objects of common concern. As already indicated, it was officially represented on the Preparatory Disarmament Commission of the League. In February the United States, upon invitation of the League, appointed a representative on the committee created by the League to investigate conditions in Liberia. In this instance the United States fully cooperated with a committee appointed by and responsible to the Council of the League. The United States was also represented on the group of economic experts formed by the League to consider the subject of recurring economic depressions. In May a Conference on Opium called by the League met at Geneva, on which the United States was represented by a strong delegation, accompanied by several expert advisors. An American citizen, Professor W. W. Willoughby of Johns Hopkins University, acted as advisor to the Chinese delegation. A convention was drawn up at the conference which was signed by the American delegation, with reservations. In this connection, it may also be noted that the League has appointed an American citizen, Norman H. Davis of New York, on the League Finance Committee.

THE UNITED STATES AND THE MANCHURIAN QUESTION

American Position.—The cooperation of the United States with the

II. INTERNATIONAL SITUATIONS AFFECTING THE U. S.

League of Nations during 1931 is best illustrated by the course of events brought about through the military operations of Japan in Manchuria, which began in September. As pointed out in *THE AMERICAN YEAR BOOK*, 1930 (p. 55), the United States had already recognized the need for closer observation of, and more authoritative information regarding, the activities of the League through appointing an experienced official, Prentiss Gilbert, as consul at Geneva. This proved to be fortunate in view of the crisis in League affairs produced by the Manchurian situation.

Secretary Stimson's Statement.

—In as much as the maintenance of international peace was one of the principal objects for which the League was formed, the Council of the League, upon the outbreak of warlike operations in Manchuria, took up the discussion of suitable measures to deal with that situation. Secretary of State Stimson, in a note to the President of the League of Nations Council assured him that the Government of the United States sympathized with the attitude of the League in the matter. On Oct. 10, in a note to Consul Gilbert for transmission to the Secretary-General of the League, Secretary Stimson declared it to be "most desirable that the League in no way relax its vigilance and in no way fail to assert all the pressure and authority within its competence toward regulating the action of China and Japan." He then went on to say that "on its part the American Government, acting independently through its diplomatic representatives, will endeavor to reinforce what the League does." A few days later M. Briand, President of the League of Nations Council, addressed an invitation to Secretary Stimson to send a representative to sit at the Council table, in recognition of the fact that the question before the Council concerned the fulfillment of obligations arising not only from the Covenant of the League but also from the Kellogg Pact, of which the United States was one of the principal proponents.

The Gilbert Appointment.—This invitation was promptly accepted by Secretary Stimson, who authorized Consul Gilbert to sit at the Council table as representative of the United States, so that he might be in a position to participate in the discussions of the Council when they should relate to the possible application of the Kellogg Pact to the Manchurian situation. In his instructions to Mr. Gilbert, however, Secretary Stimson was careful to add that "if you are present at the discussion of any other aspect of the Chinese-Japanese dispute, it must be only as an observer and auditor."

Japan's Objections.—In this connection it should also be noted that the United States is a party to the Nine-Power Treaty providing for the preservation of the open door in China and the territorial integrity of that country. The United States was, therefore, interested in the Manchurian situation both by virtue of this treaty and also of the Kellogg Pact, but found it more convenient to deal with the situation through acting concurrently or in cooperation with the League Council. Japan at first objected to the representative of the United States sitting at the Council table, but ostensibly merely on juridical grounds. Her representatives contended that the Kellogg Pact was not applicable, since there was no threat of war. Subsequently, however, she withdrew her objection to the presence of the American representative. The Council, with the participation of Mr. Gilbert invited the signatory powers of the Kellogg Pact to remind China and Japan of their obligations under that instrument. The United States complied with this request, although it did not take the lead in doing so.

Precedent of American Participation.—The unprecedented extent to which the United States cooperated with the League in the Manchurian affair establishes an important precedent for consultation and common counsel in the event of threat of war. The Kellogg Pact has served as a means of bringing us in closer contact with the League. The United

States had hitherto cooperated with the League in almost all of its major purposes except that of taking measures for the preservation of peace. Our action in the Manchurian affair goes a long way toward filling this gap in the gamut of American cooperation.

Modification of American Policy.—The extent to which the United States cooperated with the League in this affair naturally aroused the criticism of the anti-Leaguers in the United States, and, on this account, our Government seems recently to have adopted a more cautious policy. When the Council reconvened in November for further consideration of the Manchurian situation, it met not at Geneva but in Paris. Although the facts have not been made public, it would seem that this change in the location of the meeting was made partly to meet the wishes of the United States Government, which felt that there would be less suspicion of entanglement with the League if the meeting were not held at the League headquarters. Moreover, although an official of higher rank, Ambassador Dawes, was delegated to represent us at the Paris meeting, he was instructed not to participate in the sessions of the Council, but merely to "stand by" for the purpose of conferring with the representatives of the other powers. The Council came to the conclusion that an international commission of inquiry should be appointed to investigate the Manchurian situation on the spot. This commission is to be composed of representatives of five neutral powers, of which the United States is invited to be one.

Bearing on Intervention Policy.—Both the League and the United States have been accused of weakness in dealing with the Manchurian affair. It should be pointed out, however, that Japan may defend her course on either of two grounds. If she admits that she is waging war in China, she will maintain that it is a war of defense which is not prohibited by the Kellogg Pact. On the other hand, she may maintain that her action in Manchuria is not war but

intervention, such as has frequently been carried out by strong nations in weak, backward and disorganized countries. An example of this would be American intervention in Nicaragua. The United States and other nations cannot consistently insist on the withdrawal of Japan from Manchuria without establishing a precedent which will estop them from carrying out such interventions in the future. Furthermore, if it should be inquired why the League did not invoke the application of a boycott or economic sanctions against Japan, it should be remembered that such a policy would be ineffective without the cooperation of the United States, which has not indicated its willingness to cooperate with the League in that respect. As President Hoover pointed out in his message to Congress in December: "In all negotiations, the department of state has maintained complete freedom of judgment and action as to participation in any measure which the League might finally determine upon."

THE UNITED STATES AND THE WORLD COURT

Approval of Root Formula.—At the end of 1931 the position of the United States with respect to the World Court was substantially the same as it had been at the end of the previous year. The protocol for the adherence of the United States to the Court had been ratified by more than thirty nations. The formula worked out by Mr. Elihu Root for overcoming the impasse with reference to the Senate's reservations to the resolution providing for American adherence met with the approval of President Hoover and Secretary Stimson, and the protocol embodying this formula was signed by our chargé d'affaires at Berne. In February, 1931, Mr. Root appeared before the Senate Committee on Foreign Affairs and explained the procedure under the protocol. He maintained that the United States would retain a veto power over advisory opinions during our membership on the Court.

Hoover Message to Congress.—In his message to Congress in De-

II. INTERNATIONAL SITUATIONS AFFECTING THE U. S.

cember, President Hoover reiterated his recommendation for favorable Senate action on the protocols for American adherence "as a material contribution to the pacific settlement of controversies among nations and a further assurance against war." Senator Borah, chairman of the Senate Committee on Foreign Relations, indicated that the matter would be brought to a vote as soon as pressing domestic questions were out of the way. The opposition in the Senate to American adherence is still formidable, and has been somewhat accentuated during the year, due to the rather unfortunate opinion handed down by the Court by an 8 to 7 vote in the Austro-German customs union case, which was widely regarded as being influenced by political considerations.

DIRECT DIPLOMACY

Although not, of course, without precedent, the year has been especially noteworthy for the number of visits interchanged between higher governmental officials of the United States and European countries. Mention has already been made of the visits of Secretaries Stimson and Mellon to several European capitals. Both were in Paris where they met the French and German officials and both attended the Seven Power Financial Conference in London. These visits of our Cabinet officers were repaid by Premier Laval of France and Signor Grandi, Foreign Minister of Italy, both of whom visited Washington in the Autumn and had conversations not only with President Hoover and Secretary Stimson, but also with Senator Borah, Chairman of the Foreign Relations Committee. Although these direct interchanges of views may not at first sight have accomplished as much as might have been hoped, they constitute a promising step in the right direction.

THE UNITED STATES AND LATIN-AMERICA

Policy Revisions.—The policy of the United States towards Latin-America during 1931 was signalized by two main tendencies: first, the

definite abandonment of the recognition policy of former President Wilson and the return to the traditional policy established by Jefferson; and, secondly, the gradual withdrawal of American military forces from the Central-American republics in which they had been stationed,—Nicaragua and Haiti. Both these tendencies are in reality based on the same general principle: namely, that of reducing the intervention of the United States in the affairs of Central-American countries to a minimum. Wilson's policy of refusing to recognize *de facto* governments based on revolution or violence was a form of negative intervention. In an address delivered in February before the Council on Foreign Relations in New York City, Secretary of State Stimson announced the abandonment of the Wilson policy and the return to the previous policy, which "was to base the act of recognition not upon the question of the constitutional legitimacy of the new government, but upon its *de facto* capacity to fulfil its obligations as a member of the family of nations." Recognition is also dependent upon the control by the government of the administrative machinery and upon the general acquiescence of its people. The Secretary, probably having in mind the question of the recognition of Russia, was careful to add that there should be not only the ability but also the willingness to discharge its international obligations.

Secretary Stimson, however, admitted that an important exception to this policy must be allowed in the case of the five Central American republics, which have been especially subject to revolutions. In 1907 and again in 1923 these republics agreed among themselves that they would not recognize revolutionary governments, and the United States, although not a party to these agreements, has announced that, in its dealings with those republics, it would follow the same principle. This differs from the Wilson policy, however, in that it was suggested by those republics themselves rather than forced on them from outside. The

Stimson policy, however, has not been altogether successful in preventing revolutions.

Guatemala.—In one of these republics,—Guatemala—a revolution occurred in December, 1930, but the United States and the other four republics declined to recognize the revolutionary government, and its president was, therefore, forced to retire. He was succeeded by a new president, chosen in accordance with constitutional forms, and the new government was recognized in January by the United States and the other four republics.

The Monroe Doctrine.—In the course of the address referred to, Secretary Stimson made a noteworthy comment on the Monroe Doctrine, which, he declared, "far from being an assertion of suzerainty over our sister republics, was an assertion of their individual rights as independent nations. It declared to the world that this independence was so vital to our own safety that we would be willing to fight for it against an aggressive Europe. The Monroe Doctrine was a declaration of the United States versus Europe,—not of the United States *vs.* Latin America."

Mexico.—Several incidents affecting the relations between the United States and Mexico may be mentioned. In January Senator Ashurst of Arizona introduced a resolution in the United States Senate looking towards the purchase by our Government of Lower California and other portions of Mexican territory. The only visible effect of this action was to arouse indignation in Mexico. The relations between the two countries were further strained on account of unfortunate incidents happening in the United States. In June two Mexicans, one of whom was a kinsman of President Rubio, were mistaken for bandits by a deputy sheriff in Oklahoma and killed. The following month the Mexican consul in Chicago was arrested for contempt of court after an altercation with a local judge in that city, but the order of arrest was subsequently reversed by the Municipal Court of Chicago. In each case the Mexican Government

registered a protest with the State Department at Washington and in each case the Department sent a note to the Mexican Government expressing regret for the incident.

On account of the unemployment situation in the United States during the year, the tide of Mexican immigration to this country largely stopped. In fact, many thousands of Mexicans returned to their own country.

In September the League of Nations Assembly invited Mexico to become a member of the League, and she promptly accepted the invitation, with the proviso that she did not recognize the Monroe Doctrine, which is referred to in the Covenant of the League.

Nicaragua.—Sporadic attacks by bandits under Sandino continued to keep conditions in Nicaragua somewhat unsettled. In general, however, order was maintained through the efforts of the native constabulary, officered by American marines. During the year, the number of such marines in Nicaragua was considerably reduced, and it is the announced intention of the American Government to withdraw them altogether after the Nicaraguan elections of November, 1932. After that date, it is expected that Nicaragua will be in a position to conduct free and fair elections without assistance.

Concomitantly with the gradual withdrawal of the marines, the State Department is also pursuing the policy of extending less general protection to American citizens in Nicaragua. In April Secretary Stimson recommended to all Americans "who do not feel secure under the protection afforded them by the Nicaraguan Government" to withdraw from the interior to the coast towns, whence they can be protected or evacuated. He added that those "who remain do so at their own risk and must not expect American forces to be sent inland to their aid." His intention was that American citizens in Nicaragua should have such protection as American citizens in foreign lands generally are entitled to receive under international law. There seems to be no good reason why they should re-

II. INTERNATIONAL SITUATIONS AFFECTING THE U. S.

ceive more protection than this, in view of the increasing efficiency of the native constabulary and of the absence of foreign intervention.

In reference to Nicaragua, the State Department is gradually working towards the policy of non-intervention. It would seem that the time has almost arrived when the United States may safely leave Nicaragua and other Latin-American countries to work out their own destiny without interference, so long as there is no threat of intervention by any non-American power.

Haiti.—The policy of the United States toward Haiti has been similar to that towards Nicaragua. The gradual withdrawal of the American marines has continued, with the exception of a small force left to officer the native gendarmerie, and it is expected that this force will be withdrawn as soon as the Haitian National Guard is capable of maintaining order without assistance. American control in Haiti ended in October with the

exception of the marines and the American financial receiver.

Cuba.—Under the Platt Amendment, the United States reserves the right to intervene in Cuba for the purpose of maintaining a government "adequate for the protection of life, property, and individual liberty." On account of unsettled conditions in Cuba during 1931, the opinion was expressed in some quarters that the right might be exercised. In accordance, however, with the general Latin-American policy of the Hoover administration, the State Department announced that the United States would pursue as far as feasible a policy of non-intervention in the internal affairs and a policy of strict neutrality in the partisan contests in Cuba. It would not invoke the Platt Amendment unless the Cuban Government was unable to maintain a semblance of order and stability. There has been some expression of sentiment in the United States in favor of the repeal of the Platt Amendment.

LATIN-AMERICAN RELATIONS

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NEW EXPRESSIONS OF POLICY

Monroe Doctrine.—During 1931 a number of important statements were made by Secretary of State Stimson relating to the general policy of the United States towards the Latin-American republics. On Feb. 6 in an address before the Council for Foreign Relations, in regard to the Monroe Doctrine, he declared: "That doctrine, far from being an assertion of suzerainty over our sister republics, was an assertion of their individual rights as independent nations. It declared to the world that this independence was so vital to our safety that we would be willing to fight for it against an aggressive Europe." On May 9 in a radio broadcast Secretary Stimson was even more specific. He stated that "Good relations with the twenty republics of Latin-America

constitute one of the cardinal tenets of our foreign policy." As proof he pointed out that where formerly our differences with Mexico, the occupation of Haiti, and the marines in Nicaragua constituted sore spots causing unwarranted accusations of American imperialism, steps had already been taken to remove these sources of friction. Our relations with Mexico had never been better, we were withdrawing from Haiti as rapidly as possible and by the end of 1932 all the American training forces would be out of Nicaragua. We had effected a settlement of the Tacna Arica dispute and were coöperating with other Latin-American states to bring about a solution of the Bolivia-Paraguay dispute.

Protection of Nationals.—The most radical expression of policy,

however, was made April 17 in the instructions despatched to the American Legation at Managua, Nicaragua. Noting that the unprecedented violence of banditry made it inadvisable for the United States to undertake the protection of its nationals throughout the country, the department recommended to all Americans who did not feel secure under Nicaraguan protection to withdraw from the country or at least to the coast towns. This new policy, so different from that expressed by President Coolidge in 1927, was heartily commended by Senators Borah, Capper, LaFollette, and Norris, but bitterly denounced by Senator Johnson. *La Prensa* of Buenos Aires declared that the new policy gave rise to the hope of a new era of better understanding between the United States and the countries of Central America. However, a little later Secretary Stimson found it advisable to explain his new policy as being due to the inability of marines to penetrate the trackless jungles where the Sandistas operated and to the fact that the expanded Nicaraguan gendarmerie were equipped to stamp out banditry. Naval vessels would stand by at all threatened parts and we would "continue to be zealous in our concern for the lives of our nationals wherever they may be found."

Recognition.—The State Department continued its policy of recognizing revolutionary governments in South America but not doing so in Central America. Secretary Stimson explained the apparent lack of consistency by pointing out that in Central America we were merely following the line of conduct agreed upon by the Central American republics in their conference of 1923. Furthermore he felt that the policy established in that locality has been productive of very great good. The refusal to recognize the military junta in Salvador which ousted President Araujo early in December was based upon these grounds.

LATIN-AMERICAN CONFERENCES

Pan-American Commercial Conference.—This was the only out-

standing inter-American conference of the year. It met in October in Washington. Approximately 400 delegates representing all of the 21 republics of the western hemisphere were present. In his address to the Conference President Hoover declared that the fact that the meeting was held during a period of widespread economic depression emphasized the necessity for the nations of this continent to take counsel with one another. The keynote of his speech was the strong advocacy of the principle that foreign loans should be devoted solely to productive enterprise. He felt that if nations would do away with the lending of money for the balancing of budgets, for purposes of military equipment or war purposes, it would be a blessing to the entire world and the greatest step to prevent war itself. Trade barriers and currency stabilization were the outstanding topics discussed. The conference passed a resolution declaring that "excessive customs, tariffs and discriminatory internal taxes on certain natural products constitute one of the principal causes of the economic crisis through which the American republics are passing" and urged their reduction. As to currency, the conference recommended the calling of a world conference for the rehabilitation of silver.

Highway Conference.—The Inter-American Highway Commission held its second meeting March 16 to 19 in Panama City. The conference considered particularly the Central American section of the proposed Pan-American highway which is to stretch from New York to Buenos Aires. The cost of the Central American section was unofficially estimated to be between \$45,000,000 and \$50,000,000. It might be noted here that Pan-American Airways inaugurated a seven-day round trip service between Buenos Aires and Montevideo and New York and Chicago *via* Miami, Florida, during the year.

RELATIONS WITH MEXICO

Untoward Incidents.—On the whole the relations between the United States and Mexico during 1931

were friendly. A resolution of Senator Ashhurst of Arizona on Jan. 5 for the purchase by the United States of Lower California and a part of Sonora was not well received by the Mexican press. A more serious incident was provoked by the unfortunate killing of two Mexicans, one of them a relative of President Rubio, by deputy sheriffs in Oklahoma. They were mistaken for desperadoes when they drew guns. The acquittal of the deputies aroused indignation in Mexico, but the United States expressed regret for the occurrence and President Rubio accepted the apology. On Nov. 24 Foreign Minister Estrada declared that civil damages would be claimed later and that further information had been requested from the United States regarding the trial and acquittal of the assassins. The United States was also forced to apologize during the past year for the ignorance of a Chicago judge who, violating consular immunities, sentenced the Acting Mexican Consul to six months in jail for contempt of court in interfering for a Mexican prisoner.

Mexico and the League of Nations.—At the September meeting of the Assembly of the League of Nations Mexico was invited to become a member of the League. It will be remembered that Mexico was not invited to become an original member of the League; the reason usually given was that President Wilson opposed the invitation because of the strained relations between Mexico and the United States. In accepting the invitation the Mexican government did so with the reservation that it did not recognize the Monroe Doctrine as defined by Article XXI in the League Covenant.

Economic developments of importance to the United States must be noted. A two-year postponement of gold payments on the Mexican foreign debt was announced Jan. 30 by Thomas W. Lamont, chairman of the International Committee of Bankers in Mexico. This agreement took the place of the July, 1930 arrangement and was forced by the rigid decline of the Mexican peso. The depreciation became so great that late

in July the country was placed upon a silver monetary basis. A decree by President Rubio dated April 29 imposing a substantial increase of duties on certain articles imported from the United States, such as butter, eggs, lard, corn, wheat, soda crackers, wool, etc., was thought to be in retaliation against the Hawley Smoot tariff bill, which has been bitterly criticised everywhere in Latin-America. On Oct. 1 the Mexican Minister of Foreign Relations announced the appointment of Dr. José Manuel Puig Casauranc as Ambassador to the United States to succeed Senor Manuel Tallez.

THE UNITED STATES IN THE CARIBBEAN

Haiti.—In accordance with the recommendations of the Forbes Commission (THE AMERICAN YEAR BOOK, 1930, p. 61) the United States, towards the close of 1930, embarked upon a policy leading towards an early withdrawal of American marines from Haiti. Following the election of President Vincent by the Haitian National Assembly, the United States sent Dana G. Munro as Minister to Haiti to replace Brigadier General Russell, who had been serving as High Commissioner. The Haitian government reciprocated by sending Danton Bellegarde as Minister to the United States. Negotiations, begun during the spring of 1931 for the withdrawal of the marines within two years and the taking over of all offices held by Americans except the collection of customs and certain sanitary offices, were consummated by an agreement signed Aug. 5 by American Minister Munro and Foreign Minister Léger of Haiti to become effective Oct. 1. In announcing the realization of this program on Oct. 1, the State Department declared that a complete transfer to Haitian authority of all services except the office of Financial Adviser-General Receiver and the Garde d'Haiti had been effected. In the case of the customs, special safeguards had to be maintained because of the joint obligations of the United States and Haiti in connection with bond issues under the agreements of

1915, 1917, and 1919. As to the Garde d'Haiti, it was not practicable to withdraw American officers until Haitian officers had been trained to replace them. These are expected to be available before the expiration of the treaty in May, 1936.

Nicaragua.—The year 1931 opened inauspiciously for the United States in Nicaragua with the report that on Dec. 31 eight marines had been killed and two wounded in a surprise attack by bandits upon a patrol. Two resolutions were forthwith introduced into the United States Senate, one by Senator Johnson of California requesting all data concerning the American occupation from the State Department, the other by Senator King of Utah asking immediate withdrawal. The State Department acted promptly and on Feb. 13 Secretary Stimson announced that a plan for the withdrawal of the marines had been worked out by the Department and accepted by President Moncada. The Nicaraguan National Guard was to be augmented by 500 men to put down the bandits in the northwest section and it was hoped that by June the marines would be reduced to 500 and all would be withdrawn after the elections of 1932. He pointed out that whereas some 6000 marines were in Nicaragua in 1928, at present there were only about 1500.

Following the earthquakes and fire of March 31, which practically destroyed Managua, including the American legation, the bandits under Sandino became active again. The gunboat Asheville was sent to Puerto Cabezas on April 13 to protect the three hundred American citizens there and on April 17 Secretary Stimson made his important announcement regarding the new policy of protection to be followed in the jungle areas. Shortly afterwards he explained his policy by stating that, since Nicaragua had some 2000 guards operating against the bandits, the United States intended to withdraw the marines and depend upon naval vessels to afford protection in any east coast port threatened. Although the Sandistas continued their guerilla tactics, the United States retained less

than 1000 marines in Nicaragua, a nucleus which the Nicaraguan government requested to remain to train the Guarda Nacional and to supervise the elections of 1932.

Cuba and the Platt Amendment. The autocratic régime of President Machado continued to be threatened by sporadic revolutionary activities. Constitutional guarantees were suspended from the beginning of the year, and early in February the Congress gave President Machado dictatorial powers. In August martial law was declared throughout the island which was followed by the outbreak of a serious rebellion headed by Ex-President Menocal. Although some twenty odd engagements were fought, the whole revolution was over within a fortnight and Menocal captured. Acting Secretary of State Castle declared that while recognizing America obligations to Cuba under the Platt Amendment, the administration interpreted it as calling for intervention only in case of a virtual state of anarchy. The White House on Aug. 17 characterized as a "midsummer dream" the report that the United States contemplated intervention in Cuba. The economic situation became so serious that President Machado asked the Congress to negotiate with the Chase National Bank of New York for a two-year postponement of the \$20,000,000 loan for public works. Whereas in the first quarter of 1920 Cuba imported over \$95,000,000 worth of merchandise from the United States and in the same period of 1930 over \$28,000,000, in the first quarter of 1931 the figure was under \$16,000,000. On May 9 Cuba, with six other countries, signed the so-called Chadbourne plan for the stabilization of the raw sugar industry. Cuba was assigned the largest number of voting rights, thirty-five out of a total of ninety.

Honduras.—A revolt which occurred at Progreso, Honduras, on April 18 caused the Navy Department to send three cruisers to the Honduras coasts to protect American lives and property. However, by May 6 the revolution seemed to have been

II. INTERNATIONAL SITUATIONS AFFECTING THE U. S.

quelled, and the United States withdrew.

Panama.—The United States promptly recognized the new government of Panama Jan. 16 by instructing the United States Minister to attend the inauguration ceremonies of President Alfaro. On April 2 the State Department announced that the United States and Panama had concluded a claims convention providing for a mixed Claims Commission to settle all claims of citizens of the two states which have arisen since 1903. The commission was to consist of a representative of Panama, a representative of the United States, and a neutral presiding commissioner, appointed jointly. American citizens having diplomatic claims against Panama were urged to communicate at once with the State Department.

THE UNITED STATES AND SOUTH AMERICA

Bolivian-Paraguayan Dispute.—

The dispute over the Gran Chaco region between Bolivia and Paraguay again flamed out during the summer and caused suspension of diplomatic relations. Mexico, Cuba, Uruguay, Colombia, and the United States, which had already served on the conciliation commission in 1928, sent identic notes to the two governments offering their services. In response, Bolivia suggested a non-aggression pact. The neutral governments forthwith on Aug. 6 urged both governments to authorize the drawing up of a non-aggression pact in the Chaco to maintain the peace there until the controversy might be equitably settled. It was also suggested that it would be helpful if both governments should declare their intention not to send more troops into the Chaco region and to withdraw the troops already there.

Both sides accepted the invitation to discuss a non-aggression pact, but before their representatives met further clashes took place in the Chaco region. The mediating powers thereupon fixed Nov. 11 and Washington as the date and place for the two powers to initiate the framing of a

non-aggression pact. Both states named their delegates but owing to internal politics the Paraguayan delegate was recalled while en route to Washington and the conference was postponed.

Economic Problems.—The situation in South America has become materially worse owing to the catastrophic drop in the prices of its principal commodities. Santos coffee, which in 1929 sold as high as 23¾ cents a pound, reached a record low when it was quoted at less than 7½ cents. Copper dropped from 16 to 8 cents, and Chilean nitrates and Bolivian tin reached almost unheard of low levels. The results in the United States have been for the most part confined to the interests of its bondholders in South American countries. For the first time in her history Chile was forced to postpone payment on her foreign indebtedness. Brazil suspended sinking fund payments on her external debt in August and in October it was announced that because of the depreciation of the milreis, payments of interest would be made in scrip instead of cash. Both Bolivia and Peru were forced to declare moratoria on the payments of interest to foreign bondholders. On Oct. 31 the President of Colombia issued a decree providing for the suspension of cash payments on foreign debts. The situation became so critical that application was made in the United States for the formation of a Latin-American Bondholders Association, Inc., to protect the interests of investors.

Commercial Agreements.—The United States and Brazil concluded an interesting arrangement in August when the Brazilian government agreed to exchange with United States 1,050,000 bags of coffee for 25,000,000 bushels of wheat. The advantage to the United States was almost nullified later when the Brazilian government imposed an embargo on the importation of United States flour for a period of 18 months. A temporary commercial agreement was signed with Chile Sept. 28 by American Ambassador

AMERICAN RELATIONS IN THE ORIENT AND NEAR EAST

Culbertson, which is retroactive to May 22, 1931, and gives the United States most-favored-nation treatment until a permanent commercial treaty can be drawn up.

Cultural Relations.—Dr. Stephen P. Duggan, Director of the Institute of International Relations visited ten of the Latin-American republics during the year, lecturing in the various universities and discussing matters of educational coöperation with the various presidents and ministers of education. Arrangements were made in Chile to bring ten Chilean scholars to the United States as guests of the Institute. Dr. C. F. Jones of Clark University led a group of students on

a Caribbean cruise, visiting Panama, Cuba, Colombia, and making a special study of the banana and coffee industry in Costa Rica. The fifth Institute on Inter-American Affairs was held at the University of Mexico with a number of important Americans on the program, including Judge Florence Allen and Dr. Charles W. Hackett. The Guggenheim Foundation offered 13 awards to Latin-American scholars and the Carnegie Endowment made grants to the Librarian of the University of San Marcos and the Curator of the National Museum in Brazil to make further studies in their fields in the United States.

AMERICAN RELATIONS IN THE ORIENT AND NEAR EAST

BY ALBERT HOWE LYBYER

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CHINA

Outlook at the Beginning of 1931.—The outlook for Chinese political and economic progress at the beginning of 1931 seemed to be in most respects the most hopeful during the twenty years of the republic. A disrupting civil war had ended with the victory for the Nanking Government under the leadership of Chiang Kai-shek. Chang Hsueh-liang, controlling besides his patrimonial Manchuria the northeast of China proper, was on friendly and loyal terms with Nanking. Cantonese leaders served in the government and looked forward to participation in the People's Convention in May. The Japanese Government was disposed to be conciliatory. The struggle for customs control had been successful, and a new tariff went into effect Jan. 1. The abolition of extra-territoriality seemed to be at hand.

Disquieting Elements.—Reasons for disquiet existed, however, such as in most times and places would have been accounted grave. Many persons were dying of famine in the northwest. In belts across the mid-

dle of the north and the south large areas were controlled by the communists, often hardly distinguishable from the bands of brigands which were abundantly recruited from discharged soldiers and ruined farmers. Mohammedans were killing and being killed in the west. Much of the country was still controlled by the "war lords". The modest national budget of \$160,000,000 (gold) was one-fourth in excess of probable income. Gains from increase of tariffs were to be offset in part by abolition of internal customs (likin). Loans were not easily to be obtained in a time of world-wide depression. Disputes over Manchurian railways were in process with both Russia and Japan.

Government Projects.—At the beginning of March a rift with the Cantonese leaders was opened when Hu Han-min resigned office and was interned in his own house. On May 4 extra-territoriality was declared abolished without awaiting the consent of other nations. Full application, however, was deferred until Jan. 1, 1932, special tribunals being projected to be set up in the in-

II. INTERNATIONAL SITUATIONS AFFECTING THE U. S.

terval. About 500 delegates met in the People's Convention May 5, and in a two-weeks session adopted a provisional constitution of 8 chapters and 69 articles looking toward a new level of popular participation in government. Other measures contemplated were rapid extension of the education system and emulation of the activities of the Soviet Government in the directions of industry and communications, but a speedy extirpation of organized communism in China.

Floods.—Cantonese leaders returned home and set up a rival national government on May 28. Chang Hsueh-liang fell ill. Chiang Kai-shek assembled 250,000 soldiers to fight communists and, perhaps, Cantonese. July brought the greatest flood in Chinese history, covering the vast lower Yangtze basin with many feet of water during several months, and driving from their homes many millions. The government strove to relieve the unfortunate, and among other measures bought 50,000,000 bushels of wheat from the American Farm Board.

Efforts for Unified Government.—At the beginning of September a great civil war between Nanking and Canton was imminent. It was prevented by the outbreak of trouble with Japan in Manchuria which is discussed separately. At the end of the month negotiations began for a unified government. The Southerners insisted that Chiang Kai-shek withdraw from power. An announcement was made Oct. 2 that this would be done but the execution of the plan was deferred two months, some say by European influence. Meantime, a very extensive boycott of Japanese goods was organized and enforced by citizens and students. The latter ultimately precipitated the change of government. In the interval, the Fourth National Conference of the Kuomintang party was held in Nanking, resulting in the election of committees representing much of China.

Chiang Kai-shek Resigns.—Early in December thousands of students, displeased with the government's pol-

icy toward the Japanese advance in Manchuria, proceeded to Nanking and thronged the government buildings until, on Dec. 14, Gen. Chiang Kai-shek resigned. The rest of the Cabinet also gave up their portfolios. Chiang retired to his native city. Cantonese leaders were slow to appear, and at the end of the year the country could hardly be said to have a government. Nevertheless, the prospect of unified organization seemed to have been improved by the action of Japan.

JAPAN

Economic Depression.—At the beginning of the year Japan was suffering from economic depression which necessitated public relief for 380,000 or more unemployed. The budget was reduced \$130,000,000 to \$724,000,000, of which \$105,000,000 was for the navy and \$94,000,000 for the army. The quinquennial census showed that each year an addition of 1,000,000 persons must be provided for in Japan proper.

Political Troubles.—When the Diet reopened Jan. 22 Baron Shidehara expressed willingness to readjust Sino-Japanese relations on a basis of mutual concessions; Japan desired nothing unfair, and surely China did not wish to reduce the South Manchurian Railway to ruin. The desire was strongly expressed that the United States would recognize the Japanese as racial equals. The Diet was so divided as to accomplish little and was prorogued March 27. On April 13 Premier Hamaguchi resigned, suffering from the attempt to assassinate him in the previous November, from which he died Aug. 26. He was succeeded by Baron Wakatsuki, and Gen. Minami became Minister of War. The discovery that Finance Minister Inouye had manipulated the budget to conceal a further deficit of \$64,000,000 weakened the position of the government. The military group, in the background since 1922, began to assert itself and prepare for a change of policy toward China. Sixty thousand government employees were subjected to wage cuts of 20 per cent.

AMERICAN RELATIONS IN THE ORIENT AND NEAR EAST

Commerce of 1930 was found to have dropped 30 per cent below that of the previous year, and the decline was continuing.

Inukai Government.—Formosa rebelled, and there was unrest in Korea. The Manchurian situation is discussed below. The government in its negotiations with the League of Nations was hampered by the growing strength of the war party and the tendency of the War Ministry to go its own way. The Cabinet resigned Dec. 11, and the "old fox",—Count Inukai,—became Premier. Two days later Japan abandoned the gold standard. The boycott had reduced business with China,—about one-fourth of Japan's trade—by 60 per cent or more. The new government favored stern dealings with China and complete control of Manchuria.

MANCHURIA

Sino-Japanese Competition.—

The outstanding developments in the Far East in 1931 were connected with Manchuria. With an area about equal to that of Texas and a population approaching 30,000,000, possessed of coal and iron ore, with a large production of wheat, soya beans, millet and the like, Manchuria had seemed since 1894 or earlier a most desirable possession for Japan. Prevented from acquiring interests there in 1895, Japan took from Russia ten years later the leasehold of the Liaotung Peninsula and the ownership of 700 miles of railway. Japanese investment increased to about \$1,000,000,000. The Chinese poured in rapidly, reaching a proportion compared with Japanese of more than 100 to 1. Their government challenged the validity of the treaty of 1915 by which the leasehold and the railway concessions were extended to about the year 2000. The Chinese also built railways east and west of the South Manchurian line and began to construct a port at Fulutao which was intended to serve as a rival outlet for the products of Manchuria. They also hindered the Japanese from building a railway in the north to a Korean port which would provide a short route to Japan.

Japanese Objectives.—The Hamaguchi Government was conciliatory to China and negotiated toward a railway agreement. It appears that the military group, however, desired the complete control of the three provinces of Manchuria besides the neighboring province of Jehol in Chinese Mongolia on strategic grounds as defense for the future against both China and Russia. Commercially interested persons wished full control of all railways of the region, not only for individual profit but to provide Japan securely with foodstuffs, coal and iron. The Chinese Government showed itself reluctant to enter into any arrangement which would give new recognition to the treaties of 1915. At many junctures difficulties were made for the Japanese in Manchuria. In May, 1500 Japanese met in Mukden and organized to work for Japanese interests.

Preliminary Clashes.—The first bloodshed occurred in a fight of Chinese with Korean subjects of Japan July 2. This was followed by the massacre of many Chinese in Korea. The Japanese Government made amends for this. Nevertheless, the Chinese Chamber of Commerce in Shanghai voted to institute a boycott on Japanese goods. Announcement was made in Japan Aug. 17 that on June 28 Capt. Namakura had been murdered in Inner Mongolia. Traveling as an educator, he was supposed to be a spy. The Japanese army was highly indignant, and it began intensive propaganda which captured Japanese public opinion in favor of ending the Manchurian question,—so far as conquest by Japan could be called an end.

Japanese Army in Motion.—The incident was about to be solved by apologies, punishment and indemnity when an alleged bomb outrage by Chinese soldiers near Mukden in the night of Sept. 18 set the Japanese military machine in motion. A number of cities adjacent to the leased areas of the South Manchurian Railway were occupied. C. T. Wang, Chinese Foreign Minister, appealed to the signatories of the Kel-

II. INTERNATIONAL SITUATIONS AFFECTING THE U. S.

logg Pact and to the Council of the League of Nations. The Council asked both countries to withdraw troops. In Japan the forces of conciliation were still strong, and there was some recession.

League of Nations Intervenes.

—Chang Hsueh-liang, still ill at Peking, established a temporary capital at Chinchow. The Japanese army declared that he must be forever excluded from all authority in Manchuria. The Council of the League of Nations met at Geneva Oct. 13 and invited the United States to take part. Prentiss Gilbert represented the United States, Japan withholding approval. The principal nations called the attention of Japan and China to the Kellogg Pact. On Oct. 20 Japan presented five demands for cooperation and avoidance of ruinous competition between the railroads of South Manchuria, and to give effect to all existing treaty rights. On M. Briand's suggestion this was changed to the simpler but more cogent and less acceptable form,—that China should respect all her treaty commitments. On Oct. 21 China presented four proposals of which the first was the least acceptable,—that she would enter into no negotiations until the Japanese troops should be withdrawn within the zone of the South Manchurian Railway. Three days later the Council by a vote of 13 to 1 (Japan casting the dissenting vote) asked Japan to withdraw to that zone by Nov. 16. Affirming the illegality of this vote, the Japanese paid no heed to the request but advanced far north to the Nonni bridge and ultimately to Tsitsihar.

Japanese Press Military Operations.—The Council of the League met in Paris, Nov. 16, Ambassador Dawes being present but not sitting with the Council. While the Council debated the Japanese army started for Chinchow. By a last effort of the Wakatsuki Government the army was brought back temporarily. Meanwhile the Japanese were setting up an administration composed of Chinese under their

control. On Dec. 10 the Council produced a resolution which was agreed to by all, that a commission of five should be appointed "to study on the spot and to report to the Council on any circumstance which, affecting international relations, threatens to disturb the peace between Japan and China." Next day the Wakatsuki Government fell. The Inukai Cabinet found no hindrance in the Council's resolution against proceeding with the army's program. Marshal Chang Hsueh-liang was asked to withdraw his troops and government south of the Great Wall. This he did, and the Japanese followed to the occupation of Shan-kaiwan. With violence and bloodshed of war, they proceeded to clear the country of those whom they called "bandits", many of whom were soldiers of the Chinese army in uniform.

U. S. Invokes Nine-Power Treaty.—On Jan. 8, 1932, Secretary of State Stimson sent a formal note to Japan invoking the Nine-Power Treaty of 1921, in which the territorial and administrative integrity of China was guaranteed as well as the policy of the "Open Door."

TURKEY

The revolt of a few religious fanatics Dec. 23, 1930, led to trials and executions and a declaration by Premier Ismet Pasha that the government stands for "individual freedom of thought regarding religion and complete absence of coercion regarding politics". President Mustapha Kemal Pasha completed a tour throughout the country and ordered the election six months ahead of the usual time of a new Grand National Assembly. Chosen April 24, and containing one-third of new members, the Assembly on May 4 elected Mustapha Kemal President of the Turkish Republic for a third term of four years. A Press war in Istanbul led to a drastic Press law in July. A decree of the council of ministers in November established quotas for 1000 articles of import, with the endeavor to curtail luxurious expendi-

AMERICAN RELATIONS IN THE ORIENT AND NEAR EAST

tures and stabilize the balance of trade. Salaries were reduced for government employees, and the income tax was increased substantially. King Feisal of Iraq visited Turkey in July. Important personages of Greece and Russia exchanged visits with Turkish officials in connection with the renewal of treaties. A Balkan Conference was held at Istanbul in October with increase of friendly feelings and some organization of common interests. A law was brought into force requiring children of Turkish subjects to obtain elementary education in Turkish schools.

EGYPT

Early in the year the leaders of the Wafd or Nationalist and the Liberal Constitutional Parties, representing supposedly the great majority of Egyptian voters, resolved to boycott the elections because Premier Sidky Pasha and his ministry had "imposed a Constitution on the people by force of arms and promulgated it by royal decree." The Premier organized a People's Party on a platform of obviously desirable measures. First degree elections were held in May, with serious rioting and bloodshed. The government claimed an unprecedentedly large vote for its candidates. Parliament assembled June 20, a hand-picked group subservient to the Government. A drastic Press law helped control the situation. In the background throughout the year was the depression, emphasized by the low price of cotton, Egypt's major export crop. Some cotton was sold to Russia; the acreage to be planted was reduced 30%; taxes were reduced; and a Bank of Agricultural Credit was established. Early in the year new tariff rates sought increase of revenue. On Sept. 27 the gold standard was abandoned and the pound sterling was followed.

ABYSSINIA

On July 16 the Emperor Haile Salassie proclaimed a Constitution, with a Parliament of two chambers, responsible ministers, and the aim of "scientific legislation". Repre-

sentatives were chosen and Parliament met later in the year.

PALESTINE

Negotiations between the Jewish Agency and the British Government led to the reading in the House of Commons on Feb. 13 of a letter from Prime Minister MacDonald to Dr. Chaim Weizmann, explaining and softening the terms of the White Paper of October, 1930. Jewish and Arab organizations in Palestine met and criticised the British government, particularly as regards a proposed loan of \$12,500,000 to be used for aiding land settlement, and as regards the setting up of an elected legislative council. Neither project matured during the year. Zionists met in Basle on June 30 for their 17th Congress. The resignation of Dr. Weizmann as head was accepted, and Dr. Nahum Sokoloff was chosen in his place. The majority approved a continuance of the policy of co-operation with the British Government. The financial support of Zionism diminished far. Arabs ordered a one-day general strike on Aug. 23 because of the maintenance by the government of sealed armories to be opened for the use of Jews in case of outbreaks. In December a Moslem Congress met at Jerusalem and considered such questions as the establishment of a secular Moslem university there, a protest against Jewish privileges at the Wailing Wall, and the control of the Hejaz railway by foreign powers. The Arabs were divided sharply into two parties, under the leadership respectively of the Mufti and the Mayor of Jerusalem. Sir Arthur Grenfell Wanchope took office as High Commissioner on Nov. 20. The census of 1931 showed over 1,000,000 inhabitants, an increase in nine years of 30 per cent. The number of Jews was more than doubled, to 175,000, yet their total increase was less than one-half that of the non-Jews.

SYRIA

On May 28 High Commissioner Ponsot summoned for the first time the Conference of Common Inter-

II. INTERNATIONAL SITUATIONS AFFECTING THE U. S.

ests, representing all areas within the Syrian Mandate and told them of the general situation. Some kind of unitary organization was suggested, such as might make a treaty with France and be admitted to the League of Nations. After a vacation in France, M. Ponsot with an extension of five years in his term of service, returned and ordered an election in the Syrian state for the beginning of January, 1932. Parties developed amid much excitement, an important division being that between Nationalists favoring a republican form of government and Royalists favoring a monarchy under King Feisal of Iraq or some one else. The elections were accompanied by violence and bloodshed in several cities, but produced an Assembly of moderate tendencies, in favor of a republic. Commercial conditions were perhaps a little less bad than elsewhere in the Near East.

IRAQ

The Anglo-Iraq Treaty, drawn June 30, 1930 and ratified by the Parliament of Iraq in the following November, was brought to the attention of the Council of the League of Nations in January. Discussed in June before the Commission on Permanent Mandates, it was approved by that body on Jan. 5, 1932, to be transmitted to the Council. It provides for Iraqi independence, with a special relation to England, which will be represented by an Ambassador, and will have a certain responsibility for the conduct of affairs in the country. It is expected that Iraq will be admitted to the League of Nations. Agreement was reached on a forking of the pipe-line from the

Mosul oil fields to the Mediterranean, so that the French share will come out in the Lebanon and the British in Palestine. Immediate beginning of the construction of a Haifa-Bagdad railway connection is contemplated. Financial conditions were very distressing throughout the year.

PERSIA

Political conditions were unusually quiet throughout the year. In February and March Parliament gave the government a monopoly in the control of foreign trade. Imports and exports were taken in hand with the aim of maintaining equality of the two in Persian trade with each foreign country. Contracts were negotiated with Swedish groups for the completion of the railway from the Caspian Sea to the Persian Gulf, compensation for imported supplies to be provided mainly by the export of Persian commodities. Exchange rates were also determined by governmental decree. In September a law came into effect allowing women to seek divorce, and setting the marriageable age for women at 16 and for men at 18.

AFGHANISTAN

On July 6 King Nadir Shah opened a Grand National Assembly in Kabul, affirming his desire to keep peace with neighbors, maintain independence, and promote internal development. His brother Shah Mahmud became Premier. A School of Arabian Sciences was initiated, a Council of Ulema was elected, and a set of courts of justice in three stages was established.

THE AUSTRO-GERMAN CUSTOMS UNION

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NEED OF A TARIFF UNION

As a result of the settlements after the World War, European commerce

found itself checked by 20,000 kilometres of new customs frontier and nine new customs areas. These new

THE AUSTRO-GERMAN CUSTOMS UNION

tariff walls and the increasingly high tariffs everywhere were recognized as one of the chief barriers to economic recovery. But for a dozen years no country could be found to take the lead in initiating a reform for tariff reductions. It was generally felt that the problem could only be solved by all the States meeting in a conference, instead of by individual, piecemeal action. Efforts were made under the auspices of the League of Nations in this direction from 1927 onwards, but nothing positive was accomplished, owing in large part to the attitude of France. Even the effort to bring about a "tariff truce" in 1929 came to nothing because of the French demand to include a large list of exceptions, and because of the copying of the French demand by several other States. These demands for exceptions virtually nullified the probability of any satisfactory results.

On May 17, 1930, M. Briand proposed to the European members of the League of Nations a somewhat vague plan for a European Union which should deal with economic questions. But the replies to his proposal revealed more points of disagreement than of agreement. England, Germany, and Italy wanted Russia and Turkey to be invited to join in the discussion of the proposal. Many States feared that the proposed European Union might weaken the League of Nations by becoming a rival to it. Others objected to M. Briand's attempt to make the solution of the problem of security the basic purpose and primary aim of the proposed Union. After discussion in the League Assembly in September, 1930, the proposal was handed over to a Commission of Enquiry, but it seemed unlikely that the Commission would achieve speedy or satisfactory results.

ARTICLES OF PROPOSED AUSTRO-GERMAN UNION

Under these circumstances Austria and Germany decided to proceed to a regional agreement between themselves, believing it futile to expect to secure tariff reductions by a general

agreement of all the European States. They had already hinted at this procedure by regional agreement during the discussions of M. Briand's proposed European Union, but little attention had been given to their views. Accordingly they announced on March 21, 1931, the terms of an agreement signed by them at Vienna two days previously, which stated the general principles on which they proposed to draw up later an Austro-German Customs Union. The chief of these principles were:

Art. 1. Preservation of the absolute independence of both nations; the initiation of a new order in European economic conditions by means of regional agreements; and an invitation to other nations to enter into similar agreements.

Art. 2. Austria and Germany to agree upon their customs tariffs.

Art. 3. No import or export duties to be levied between the two countries.

Art. 4. Agreement concerning the turnover tax, consumption excise, and monopolies.

Art. 5. The customs administrations of the two countries to function independently of each other, each country bearing the cost of its own administration.

Art. 6. Provision for the division of the total sum of customs.

Art. 7. No import, export, or transit prohibitions to exist between the two countries, except for reasons of public safety and health.

OPPOSITION OF FRANCE AND HER ALLIES

The announcement of the Austro-German proposal roused at once a storm of criticism and opposition in the press of France, Poland, Czechoslovakia, Rumania, and Jugoslavia, but was greeted with general satisfaction in Austria and Germany. The opposition in France and in the States which follow her political lead was caused by several factors. They were disagreeably surprised at the suddenness of the announcement,—at the fact that they had not been consulted beforehand and given an opportunity

II. INTERNATIONAL SITUATIONS AFFECTING THE U. S.

to register objections. They feared that this might be a first step toward *Anschluss* or "political union" between Austria and Germany, just as the Prussian *Zollverein* or Customs Union in the early nineteenth century had contributed to the political union of the German States in 1871. They objected that Austria was impairing her own independence and, therefore, infringing the terms of the Treaty of St. Germain of 1919 and the Protocol of Geneva of 1922 under which Austria had been given an international loan. They accordingly demanded that the matter be brought before the Assembly of the League of Nations. After much heated debate in the newspapers and by the leading statesmen of Europe it was finally agreed to submit the juridical question of the legality of Austria's action to the World Court. Meanwhile France put such financial pressure on Austria, withdrawing funds and bringing about the failure of the largest Austrian Bank (*Boden-Creditanstalt*), that Austria agreed to renounce the Austro-German Customs Union.

DECISION OF THE WORLD COURT

A few days later, on Sept. 5, 1931, the court gave its advisory opinion, by a vote of 8 to 7, that the proposed Customs Union was incompatible with the Geneva Protocol of 1922. With the exception of the Belgian judge, the judges appear to have voted in conformity with the political attitude of the country which they represented. The eight judges giving the majority opinion against the Customs Union were: Fromaget (France), Rostowski (Poland), Negulesco (Rumania), Altamira (Spain), Anzilotti (Italy), Urrutia (Columbia), Bustamante (Cuba), and Guerrero (Salvador). The dissenting minority were: Kellogg (United States), Hurst (England), Schuecking (Germany), Van Eysinga (Holland), Wang (China), Adatchi (Japan), and Jaequemyns (Belgium). Noting the political preponderance of the countries represented by the minority, some newspapers made the comment that the decision would have been different if the votes had been "weighed" instead of "counted."

THE FRANCO-ITALIAN NAVAL DISCUSSIONS

BY ROBERT C. BINKLEY

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THE BEARING ON THE LONDON CONFERENCE

The London Conference of 1930 had been unable to bring France and Italy into the scope of its arms limitation treaty because these powers could not agree with each other. Italy demanded, and France refused to concede, that the principle of parity applied by the Washington Conference to capital ships should be extended by the London Conference to all other categories. The prospect of a race in naval construction between France and Italy made it necessary for England to safeguard her margin of naval superiority over Continental powers by inserting in the treaty a clause giving her the right to exceed the London quotas

if either Continental power should build too much. It was clear that the London schedules were not definitive unless France and Italy could be brought to agree with each other. Neither direct Franco-Italian negotiations, nor the mediating effort of the American Ambassador to Belgium, Hugh S. Gibson, had led to any positive result by December, 1930.

DRAFT AGREEMENT

Tension Develops.—The history of the Franco-Italian naval question from December, 1930 to December, 1931 falls into four periods. During December and January the British Foreign Office took up the mediator's rôle, and seemed to make progress. On Jan. 1 Premier Mussolini made a

radio speech which pledged Italy to work for peace, and which seemed to provide a favorable atmosphere for naval discussions. But on Jan. 20 the Italian Government announced that it would build gun for gun against the French, and tension developed to such a point that A. V. Alexander, First Lord of the Admiralty, warned the House of Commons on Feb. 5 that England might be forced to expand her own building program.

Announcement of Agreement.—The second period ran from early February to the latter part of March. In this period a draft agreement was actually confirmed by all the powers concerned. Robert L. Craigie, naval expert and head of the American section of the British Foreign Office, who had sounded out the situation in December, returned to Paris to work upon definite tonnage schedules. The leading thought was to find an agreement which would control construction while leaving in abeyance the problem of theoretical parity, and thus postpone the most difficult political problem until the Disarmament Conference of 1932, or possibly until 1936. By Feb. 23 Craigie's work with the French experts was so far advanced that Foreign Minister Arthur Henderson made a visit to Paris to take up the negotiation, and then continued on to Rome on Feb. 26. Announcement was made from Rome on March 1 that an agreement, to run till 1936, had been reached.

Terms.—The principles of this agreement, made public on March 11, were as follows:

1. Capital ships: Both powers to be permitted to exceed by 6,000 tons their quota under the Washington treaty. This concession, which would naturally require the consent of Japan and the United States, had the character of a price paid by the great naval powers for the satisfaction of seeing the Franco-Italian dispute ended.

2. Aircraft carriers: Both powers to be permitted to construct 34,000 tons.

3. Large cruisers: "No further construction," until 1936, of cruisers with

guns of six inches or over "after the completion of the 1930 program." Over age tonnage to be retained, although "it was made clear during the negotiations that the temporary retention of this tonnage conferred no right to its ultimate replacement." It was upon the interpretation of this section that the negotiations later broke down.

4. Small cruisers and destroyers: No construction except to replace old ships; no replacement of ships which will be less than 16 years old in 1936.

5. Submarines: "No further construction other than the completion of the 1930 program and for replacement of over age tonnage."

The effect of the agreement was to adjourn the parity question while leaving the French Navy its existing superiority of 200,000 tons, mostly in the form of old ships.

MISUNDERSTANDING AND DEADLOCK

After arrangements had been made to tie this agreement up with the London Treaty it appeared that there was a fundamental misunderstanding of its terms. This fact was realized in the drafting committee which met in London on March 20. From this date the matter entered its third period, which was one of futile discussion and deadlock. For the French sought permission to begin construction to replace the aging cruisers in 1934, while Italy insisted that these old ships, which provided the French with their tonnage superiority, could not be replaced during the life of the agreement. The repeated attempts made between April and September to come to an agreement were fruitless, because the Italians had consented to a position of inferiority only in the thought that the depreciation of the old ships would automatically cut down the French lead. Thus the agreement of March 1 remained a dead letter.

THE GRANDI TRUCE

On Sept. 8 a new note was struck by Dino Grandi, Italian Foreign

II. INTERNATIONAL SITUATIONS AFFECTING THE U. S.

Minister, when he proposed that all powers should agree to a naval construction truce of one year. This proposal was approved by the Assembly of the League of Nations on Sept. 29. On Nov. 16, after 36 nations, including all the great Powers, had signified their adherence, Sir Eric Drummond announced that the truce was in effect.

INTERNATIONAL CONFERENCES

BY WILLIAM T. STONE

WASHINGTON REPRESENTATIVE OF THE FOREIGN POLICY ASSOCIATION

THE MORATORIUM CONFERENCE IN LONDON

During 1931 the United States took a more active part in international conferences than during any period since 1919. The acute financial crisis in Germany and the serious economic situation in Central Europe arising from the world depression, was the immediate cause of President Hoover's proposal of June 20 for a one-year moratorium in intergovernmental debts and reparations which led to a series of far-reaching international negotiations. While Great Britain, Italy, Germany and other creditor nations promptly announced adherence to the plan, the French Government raised a number of technical questions which necessitated protracted discussion. Negotiations began at once in Paris, Secretary of the Treasury Mellon and Ambassador Walter E. Edge representing the United States. It was not until July 6 that an agreement in principle was announced. The terms of acceptance by the French government were, of course, subject to the approval of the other interested powers and it was necessary to convene a formal international conference to work out the details of the American plan. On July 17 a conference of experts met in London to conclude an agreement on the application of the moratorium proposal. This conference was in session until August 13, with the United States represented by Dr. Frederick Livesey, Assistant Economic Adviser of the Department of State.

MINISTERIAL CONFERENCE ON GERMAN CREDIT CRISIS

Meanwhile, the financial crisis in Germany having been intensified by the heavy withdrawal of foreign short-term credits, it was necessary to convene a Conference of Ministers, which met in London July 20-23 to deal with the German emergency. This Conference, presided over by Prime Minister MacDonald of Great Britain, was attended by Premier Laval of France, Chancellor Bruening and Foreign Minister Curtius of Germany, Foreign Minister Grandi of Italy, and ranking statesmen of the other interested governments. The United States was officially represented by Secretary of State Stimson and Secretary of the Treasury Mellon. The Conference recommended that concerted measures should be taken by financial institutions in the different countries to maintain credits already extended to Germany and urged the Bank of International Settlements to set up a committee of experts to inquire into the immediate further credit needs of Germany.

COMMITTEES ON GERMAN CREDITS AND REPARATIONS

American economists and bankers participated actively on the various committees created to deal with the economic situation. Albert H. Wiggin, of the Chase National Bank, served as chairman of the special committee created by the Bank of International Settlements at the request of the London Conference of Ministers to study the credit needs

INTERNATIONAL CONFERENCES

of Germany. On Aug. 19 the committee announced an agreement whereby, with certain exceptions, foreign creditors would not withdraw their short term credits from Germany until February, 1932. Walter V. Stewart, New York banker, was appointed at the suggestion of the Federal Reserve Bank of New York to serve on the special advisory committee to serve on the special advisory committee to determine Germany's capacity to pay reparations upon the termination of the moratorium year. The committee met at Basle, Switzerland, Dec. 6, following a request by Germany for a survey of its financial position as provided for in the provisions of the Young Plan.

HOOVER CONVERSATIONS WITH LAVAL AND GRANDI

Further discussion of economic and financial problems was conducted by means of direct conversations rather than formal international conferences. During July and August Secretary Stimson conferred with leading statesmen in Rome, Paris, London and Berlin. In October Premier Laval of France visited President Hoover in Washington, where the world economic situation was the principal subject of discussion. Other issues discussed, according to the joint statement issued by the President and Premier Laval on Oct. 25, were the problems of the forthcoming Disarmament Conference, the effect of the depression on payments of intergovernmental debts, the stabilization of international exchanges and other financial and economic subjects. In November Foreign Minister Grandi of Italy, visited the United States for the purpose of conferring with President Hoover and Secretary Stimson on international problems of concern to the two governments.

LEAGUE OF NATIONS CONFERENCES

Apart from the negotiations dealing with the application of President Hoover's debt moratorium proposal, the most important international

conferences in which the United States participated were those held under the auspices of the League of Nations. As in previous years, the United States cooperated in the humanitarian and non-political work of the League by appointing delegates to serve either as official representatives or "representatives in an expert and advisory capacity" on the various committees and commissions meeting at Geneva. Thus the United States was represented by experts on the Advisory Committee on Traffic in Opium and Other Dangerous Drugs, which held its Fourteenth Session at Geneva, Jan. 9 to Feb. 7, and at the International Conference for the Unification of Laws on Bills of Exchange, Promissory Notes, and Cheques, which convened at Geneva Feb. 3 and adjourned March 19. Other League conferences at which the United States was represented by delegates serving in an expert capacity were: the First Conference of Representatives of Central Police Offices, March 4-7; the Fourth International Conference of Labor Statisticians, May 19-24; the European Conference of Rural Hygiene, June 29-July 7; and the Committee on the Regulation of Whaling, Sept. 9-10, all at Geneva.

NARCOTIC DRUGS CONFERENCES

Geneva.—The largest international conference in which the United States participated was the Conference on Limitation of the Manufacture of Narcotic Drugs, which met at Geneva May 27 and adjourned July 13. This Conference of more than fifty states, was called by the League of Nations to consider plans for directly limiting the quantities of opium coca leaf derivatives to be manufactured and, also, to consider measures for widening the scope of the existing control of distribution. The United States was represented by Consul-General John K. Caldwell, chairman; Harry J. Anslinger, Commissioner of Narcotics; Dr. W. L. Treadway, Assistant Surgeon General of Public Health Service, and Sanborn Young, member of the Cali-

II. INTERNATIONAL SITUATIONS AFFECTING THE U. S.

for California State Senate. On July 13 the Conference approved the text of a Convention for limiting the manufacture and regulating the distribution of narcotic drugs which was signed by twenty-eight countries including the United States.

Bangkok.—The United States was also represented at the Conference on Opium Smoking in the Far East which met at Bangkok, Siam, Nov. 9. As the Conference was called under the provisions of a Treaty to which the United States is not a party,—the First Geneva Opium Agreement of 1925—the American delegate, Consul-General Caldwell, was instructed to attend in the capacity of observer.

ARMAMENTS

Greater significance, however, was attached to the participation of the United States government in the meetings of the League of Nations Assembly in connection with the proposal for an armaments truce and in the meeting of the League Council in October to deal with the controversy between Japan and China in Manchuria. The armaments truce, proposed by Signor Grandi, the Italian delegate, was referred to the Third Committee of the Assembly which deals with Disarmament. As the proposed truce would affect a number of states not members of the League, the Third Committee requested the President of the Assembly to invite ten non-member states, including the United States, to take part in the discussion at Geneva. The American government received the invitation Sept. 20 and on the following day Secretary Stimson accepted and instructed the American Minister to Switzerland,—Hugh R. Wilson—to participate “in a consultative capacity.” At the conclusion of an eight-day session, in the course of which France, Japan and Poland raised various objections to the Italian proposal, the Third Committee adopted a resolution requesting the Council to urge all of the states invited to the General Disarmament Conference to accept a one year truce beginning Nov. 1, 1931,

during which they would refrain from any measures involving an increase in their armaments. In a note to the Secretary-General of the League of Nations, Secretary Stimson accepted the proposed truce on the understanding that it “shall not apply to the construction which had been begun or for which contracts had been let prior to its entry into force.” By Nov. 13, forty-three governments, including all of the great powers, had accepted the truce which was regarded as having come into effect on Nov. 1, 1931.

MANCHURIA

United States Participation.—The direct participation of the American government in the discussions of the Council of the League of Nations during the early stages of the controversy between Japan and China in Manchuria, marked an important departure in the relations between the United States and the League. When hostilities broke out in Manchuria, Sept. 18, the Council of the League was in session at Geneva. The Chinese representative promptly invoked Article XI of the League Covenant, requesting the Council to take immediate steps to prevent further developments and to restore the *status quo ante*. The following day the Council dispatched notes to the Chinese and Japanese governments urging that they withdraw their troops and abstain from any acts likely to aggravate the situation. The United States, as a party to the Pact of Paris and the Nine-Power Pact, declared its “wholehearted sympathy with the attitude of the League of Nations as expressed in the Council’s resolution” and on Sept. 23, announced its intention to send notes to Japan and China “along similar lines.”

Secretary Stimson’s Statement.—On Oct. 9 Secretary Stimson sent to the American Consulate at Geneva, for communication to the Secretary-General of the League of Nations, a message reaffirming the desire of the United States to cooperate with the Council and Assembly of the League in the settlement of the Manchurian

dispute by pacific means. The message concluded with the statement that: "On its part the American government acting independently through the diplomatic representatives will endeavor to reinforce what the League does and will make it clear, that it has a keen interest in the matter and is not oblivious to the obligations which the disputants have assumed to their fellow signatories in the Pact of Paris, as well as in the Nine-Power Pact should a time arise when it would seem advisable to bring forward those obligations." By this course we avoid any danger of embarrassing the League in the course to which it is now committed."

League's Invitation to the United States.—A few days later, on October 16, M. Briand, the President of the Council, invited the government of the United States to "sit at the Council table so as to be in a position to express an opinion as to how, either in view of the present situation or of its further development, effect can best be given to the provisions of the Pact of Paris." M. Briand pointed out that in the course of the discussion the opinion had been expressed that the question before the Council concerned not only the Covenant, but also the Pact of Paris. The invitation of the Council was approved by a vote of 13 to 1, with the representative of Japan opposing participation by the United States.

Instructions to Prentiss Gilbert.—On the same day the American Consul-General, Prentiss Gilbert, informed the President of the Council that he had been directed by the Secretary of State, "to accept on behalf of the government of the United States this invitation to send a representative and to inform you that he has designated me to act in that capacity." The following instructions were sent by the Secretary of State to Mr. Gilbert: "You are authorized to participate in the discussions of the Council when they relate to the possible application of the Kellogg-Briand Pact, to which Treaty the United States is a party. You

are expected to report the result of such discussions to the Department for its determination as to possible action. If you are present at the discussion of any other aspect of the Chinese-Japanese dispute, it must be only as an observer and auditor."

League Action.—In sitting with the Council at its session on Oct. 16, Mr. Gilbert emphasized again that the United States was not in a position to participate with the members of the Council in the formulation of any action envisaged under that instrument, but declared that the Pact of Paris represented an effective means of marshaling the public opinion of the world behind the use of pacific settlement of international disputes. With Mr. Gilbert participating at its meetings, the Council invited signatories of the Pact of Paris to remind China and Japan of their obligations under this Treaty and on Oct. 24 recommended that Japan withdraw its troops within treaty limits in Manchuria by Nov. 16. The Council then adjourned until further call.

General Dawes at the Council.—Early in November it was apparent that the Japanese government would not be in a position to comply with the resolution of the Council recommending withdrawal of troops by Nov. 16 and a meeting of the Council was called for that date, to meet in Paris. The American government, however, did not appoint a representative to sit with the Council at this meeting. Instead, the American Ambassador to London, General Charles G. Dawes, was instructed to proceed to Paris where he would be available to discuss the Manchurian situation with representatives of the other states assembled for the Council meeting. On Nov. 20, Ambassador Dawes explained that the United States could not take part in the discussions bearing upon the application of the machinery of the League Covenant, but asserted that "the position thus necessarily assumed by the United States in no way indicates that the United States is not wholly sympathetic with the efforts being made by the League to

II. INTERNATIONAL SITUATIONS AFFECTING THE U. S.

support the objective of peace in Manchuria. The United States must, however, preserve its full freedom of judgment as to its course." Ambassador Dawes remained in Paris until December 10, when the League Council adjourned following acceptance of its resolution by the fourteen council members, including China and Japan.

Criticism in the United States.

—The policy of the United States with respect to the Manchurian controversy was criticized, both by those opposing cooperation with the League of Nations and those who urged more drastic measures for the preservation of peace. Isolationist members of the United States Senate, led by Senator Johnson of California, strongly attacked Secretary Stimson's note to the League. A section of the press and several leading American Peace organizations, on the other hand, held that the failure of the United States to support the measure proposed by the Council for the withdrawal of Japanese troops was responsible for what they regarded as the ineffectiveness of the League of Nations in this crisis.

OTHER INTERNATIONAL CONFERENCES

The other most important international conferences, congresses etc., held during 1931 and attended by United States representatives were as follows:

INTERNATIONAL COMMITTEE ON LIBERIA, First Session, London, February 27-March 3.

SECOND PAN-AMERICAN CONFERENCE OF DIRECTORS OF HEALTH, Washington, April 20-28.

SIXTH GENERAL CONGRESS OF THE INTERNATIONAL CHAMBER OF COMMERCE, Washington, May 4-9.

SECOND INTERNATIONAL COFFEE CONFERENCE, Sao Paulo, May 17-June 17.

CONFERENCE OF WHEAT EXPORTING COUNTRIES, London, May 18-23.

INTERNATIONAL TECHNICAL CONSULTING COMMITTEE ON RADIO COMMUNICATIONS, Copenhagen, May 27-June 8.

THIRTEENTH INTERNATIONAL HOUSING AND TOWN PLANNING CONGRESS, Berlin, June 1-5.

FIFTEENTH INTERNATIONAL CONGRESS OF AGRICULTURE, Prague, June 5-8.

SECOND INTERNATIONAL HOSPITAL CONGRESS, Vienna, June 8-14.

SIXTH INTERNATIONAL CONGRESS OF MILITARY MEDICINE AND PHARMACY, The Hague, June 15-20.

ELEVENTH SESSION OF THE JOURNÉES MÉDICALES DE BRUXELLES, Brussels, June 20-24.

FIFTEENTH INTERNATIONAL COTTON CONGRESS, Paris, June 23-26.

SIXTH CONGRESS OF THE INTERNATIONAL ASSOCIATION OF AGRICULTURE OF TROPICAL COUNTRIES, Paris, June 27-July 1.

INTERNATIONAL CONGRESS FOR THE PROTECTION OF NATURE, Paris, June 30-July 4.

INTERNATIONAL CONGRESS OF WOOD AND SYLVICULTURE, Paris, July 1-5.

FORTY-SECOND CONGRESS OF THE ROYAL SANITARY INSTITUTE, Glasgow, July 4-11.

NINTH INTERNATIONAL DAIRY CONGRESS, Copenhagen, July 13-17.

SIXTH CONGRESS OF THE INTERNATIONAL SEED TESTING ASSOCIATION, Wageningen (Holland), July 13-18.

THIRTEENTH INTERNATIONAL CONGRESS OF SECONDARY INSTRUCTION, Paris, July 16-24.

SEVENTH INTERNATIONAL CONGRESS OF AQUICULTURE AND FISHERIES, Paris, July 20-25.

THIRD PAN-AMERICAN MEDICAL CONGRESS, Mexico City, July 26-31.

EIGHTH INTERNATIONAL DENTAL CONGRESS, Paris, August 2-8.

SIXTH INTERNATIONAL CONGRESS OF INDUSTRIAL ACCIDENTS AND DISEASES, Geneva, August 3-8.

FIRST INTERNATIONAL CONGRESS OF THE NEW INTERNATIONAL ASSOCIATION FOR THE TESTING OF MATERIALS, Zurich, September 6-12.

INTERNATIONAL CONGRESS FOR STUDIES REGARDING POPULATION, Rome, September 7-10.

EIGHTEENTH INTERNATIONAL CONGRESS OF ORIENTALISTS, Leiden, September 7-12.

UNITED STATES AND LEAGUE OF NATIONS

FIFTEENTH CONGRESS OF THE PERMANENT INTERNATIONAL ASSOCIATION OF NAVIGATION CONGRESSES, Venice, September 12-19.

TWENTIETH SESSION OF THE INTERNATIONAL INSTITUTE OF STATISTICS, Madrid, Sept. 14.

INTERNATIONAL CONGRESS OF GEOGRAPHY, Paris, Sept. 15-27.

SECOND INTERNATIONAL CONFERENCE ON THE RAT, Paris, October.

TWENTY-SEVENTH CONFERENCE OF THE

INTERPARLIAMENTARY UNION, Bucharest, Oct. 1-7.

FOURTH PAN-AMERICAN COMMERCIAL CONFERENCE, Washington, Oct. 5-12.

THIRD CONGRESS OF THE PAN-AMERICAN POSTAL UNION, Madrid, Oct. 10.

FOURTH GENERAL CONFERENCE ON COMMUNICATIONS AND TRANSIT, Geneva, Oct. 12-24.

SECOND CONGRESS OF COMPARATIVE PATHOLOGY, Paris, October 14-18.

THE UNITED STATES AND THE LEAGUE OF NATIONS, WORLD COURT AND THE INTERNATIONAL LABOR OFFICE

By ARTHUR SWEETSER

AMERICAN MEMBER, SECRETARIAT OF THE LEAGUE OF NATIONS

AMERICAN COOPERATION WITH THE LEAGUE

The intensification and concentration of world contacts, accentuated year by year after the war, were reflected in a considerable development during 1931 in the relationship between the United States and the League of Nations. During previous years, America's interest in these activities had necessitated her representation in a considerable number of conferences, commissions and committees initiated by the League. At the end of the League's first decade the principle seemed established that the United States would be represented in activities where its interests were involved, with the single and very important exception of the League's central agencies, the Assembly and Council. To be sure, Congressman Porter had followed the opium problem through from a special committee to the Third Committee of the Assembly in 1924, and indirect relationship had been established with the Council in one or two matters of interest, such as the Greek Refugee Settlement scheme, but these contacts have been so scattered and special that America's relationship to the League could hardly have been said to have ex-

tended to these two principal agencies.

The concentration of world interest in 1931 was to change that situation considerably. During the Twelfth Assembly in September the United States was invited, in view of its participation in all other disarmament work of the League, to participate in the very important disarmament debates in the Assembly, and an American delegation accordingly took part for the first time in a major discussion at the Assembly. Less than a month later, when American interests were deeply involved in the Council's debates on Manchuria, the United States accepted an invitation to be present with the right to participate in so far as the debates affected the Kellogg Pact. Finally, when the Council created a special committee of its own members to consider the Liberian problem, which had been referred to the League, the United States was again associated with the committee's deliberations.

America's long standing cooperation in specific League activities and its more recent cooperation with special interests of the Assembly and the Council, was brought about without raising the question as to America's ultimate relationship to the

II. INTERNATIONAL SITUATIONS AFFECTING THE U. S.

League as a whole. In all these cases it was in the interest of states which are members of the League to invite the United States to join in their common deliberations, and it was equally in the interests of the United States to do so. Thus, while the United States remains a non-member of the League, it is developing a working basis of cooperation with this organized method of international cooperation around which most of the other nations of the world are more and more concentrating their common efforts.

The development of this cooperation and the dying out of the hostilities engendered in the 1920 conflict brought about a smoother and more efficient cooperation in day-to-day relationships. The Geneva Consulate was further strengthened during 1931, while two more Americans were added to the League Secretariat. Finally, the United States continued its proportionate contribution to the extraordinary expenses of the conferences in which she had officially participated during the previous year, namely, the Advisory Committee on Opium, the First Codification Conference, the International Conference on Bills of Exchange, the Air Transport Coordination Committee, the Special Committee on Traffic in Women, the Conference on the Unification of Bouyage and Lighting of Coasts, and the Preparatory Commission for the Disarmament Conference.

DISARMAMENT

The United States was the first government to submit, on June 9, 1931, a detailed memorandum on the state of its armaments, requesting the League to give it the widest publicity in order "that other nations may thus be encouraged to lay their figures before the public without delay." The example was followed by other governments and created, in fact, an innovation in procedure. Several times thereafter the government took occasion to stress the importance attached to disarmament, President Hoover in his moratorium proposal June 21, for instance, stating

that "inasmuch as the burden of competitive armaments has contributed to bring about this depression, we trust that by this evidence of our desire to assist, we shall have constituted the good will which is so necessary to the solution of the armaments question."

In September the United States further emphasized this interest by accepting for the first time an invitation to take part in a major discussion of the Assembly. When the Italian proposal for an armaments truce was to be debated, the United States and other non-members of the League were invited to be present. The government immediately accepted, and the American Minister to Switzerland, Hugh R. Wilson, was designated as representative. The truce was recommended by the Assembly and became operative as of Nov. 1. The United States, in notifying the League of its acceptance, expressed the hope "that by a unanimous acceptance of this truce an atmosphere would be created which would prevent competition in armaments and prepare the ground for the General Disarmament Conference." Finally, the United States accepted, July 8, the League's invitation to attend the Disarmament Conference opening Feb. 2, 1932, and in December announced that Ambassador Dawes would head the delegation comprised of Senator Swanson, Ambassador Gibson, Norman H. Davis and Miss Woolley.

MANCHURIA

Attitude of U. S. and the League.—One of the first steps taken by the Council of the League when the Manchurian problem broke so suddenly upon it in September, was to decide, in view of America's very special interests in the Far East, in the "Open Door" Policy, the Kellogg Pact, and the Nine-Power Treaty, to send all its documents to that government. Almost immediately after, when informed of the Council's appeal to both China and Japan to withdraw their troops and to avoid aggravating the situation further, Secretary Stimson replied Sept. 24th

UNITED STATES AND LEAGUE OF NATIONS

that "the Government of the United States is in whole-hearted sympathy with the attitude of the League of Nations as expressed in the Council's resolution and will dispatch to Japan and China notes along similar lines." The following day the text of the note dispatched to Tokyo was handed by the American Minister to the President of the Council. Throughout the session Mr. Wilson was in close touch with the proceedings and in constant communication with Washington.

U. S. Supports League.—On Oct. 9 came the first bombardment of Chinchow. With diplomatic notes going back and forth on all sides, the United States addressed to the Council one of the most important documents it had ever sent the League, pointing out that "the Covenant of the League provides well-tried machinery for the handling of such questions" and that "it is highly desirable that the League in no way relax its vigilance and in no way fail to assert all the authority and power in its competence with a view to regulating the action of Japan and China in the premises. The American government on its part, acting independently through its diplomatic channels, will try to reinforce the League's action."

America at Council Table.—The situation, however, grew ever tenser, and considerable discussion ensued as to invoking the Kellogg Pact. In this connection a question arose as to America's closer association with the other powers in order to present a wholly united front. On Oct. 15, after several days of opposition by Japan on constitutional grounds, the Council decided to invite the United States "to be associated with our efforts by sending a representative to sit at the Council table so as to be in a position to express an opinion as to how, either in view of the present situation or with regard to future development, effect can best be given to the provisions of the (Kellogg) pact." The following day the American Consul in Geneva, Prentiss Gilbert, was authorized to accept the invitation and

that afternoon he took his seat in the public session. The welcome extended him showed that, entirely irrespective of America's relationship to the League as a whole, the members of the Council attached the greatest importance to such special cooperation and the facility it afforded for creating a united front.

U. S. Gives Full Cooperation.—When the Council met a third time, in Paris on Nov. 16, it was announced that the United States would be represented by Ambassador Dawes, who did not actually sit with the Council but who was in constant touch both with its deliberations and with certain of its members. On several occasions, General Dawes issued statements emphasizing America's sympathy with and support of the League's negotiations. Finally, when the Council's resolution was adopted Dec. 10, the Secretary of State issued a statement in Washington that "the Government of the United States is gratified at the unanimous adoption by the Council" of the resolution "which represents a definite step of progress in the long and difficult negotiations which M. Briand and his associates have conducted with great patience." The American government, he said, had "from the beginning endeavored to cooperate with and support these efforts of the Council"; the American people are "interested in the same objective sought by the League of preventing a disastrous war and securing a peaceful solution of the Manchurian controversy." The United States, it was understood, would cooperate in every possible way in the execution of this resolution, particularly in connection with the very important Commission of Inquiry, for which, as the year closed, an American member was being sought.

ECONOMIC QUESTIONS

Study of Depression.—While during 1931 the League's efforts for a world-wide agreement to carry out the program approved in the 1927 Economic Conference were largely blocked by the Universal depression and the drift towards tariffs, many

II. INTERNATIONAL SITUATIONS AFFECTING THE U. S.

special activities and studies were continued, in most of which the United States cooperated. In the Economic Committee, which is a kind of general planning agency, Lucius Eastman continued as the American member, attending two of the three meetings held during 1931, and being replaced in the third by Edward E. Hunt. The world-wide economic crisis was submitted to special study in two sessions of the committee of representatives of national economic councils and national economic research institutes, both of which were attended by Mr. Hunt as secretary of President Hoover's Committee on Recent Economic Changes. Fourteen memoranda, representing researches in different countries, were presented and an authoritative book published on the whole question of the course of the present depression.

Agriculture.—The world agricultural problem was considered in the second meeting of agricultural experts in January, attended by Lloyd V. Steere, U. S. Commissioner of Agriculture in Berlin. Here again another general study was published on the international agricultural situation and special attention given to the question of surplus cereals and credits.

International Statistics.—The development and improvement of international statistics, now so greatly deficient, was discussed at the first meeting of the committee of statistical experts provided by the 1928 convention, which was attended by Dr. Dana Durand, former statistical advisor to the Secretary of Commerce. A general plan was laid out and sub-committees appointed on classification, index numbers, industrial statistics and electric power data.

Law Unification.—The second general conference of the Unification of Laws of Bills of Exchange and Checks met in Geneva from Feb. 23 to March 19, with Martin H. Kennedy, U. S. Trade Commissioner in London, present as an expert. The Conference aimed to unify the laws on the Continental type of checks

previous to a world-wide unification, and formulated three conventions on checks, on conflict of laws and on stamp laws.

Counterfeiting.—In order to improve direct international cooperation between central police offices in the prevention and punishment of counterfeiting currency, a conference of twenty-five states signatory to the 1929 Convention, was held in March, with William H. Moran, Chief of the Secret Service of the Treasury Department, and Alvin W. Hall, of the Bureau of Printing and Engraving, representing the United States. The conference recommended a convention on international collaboration between police forces.

FINANCIAL QUESTIONS

The League's Financial Committee was mainly concerned during 1931 with special requests from Austria and Hungary for assistance in the special emergencies facing them; with investigations in China, India, Liberia and Lithuania; with proposals for an institution for long and middle-term credits; and with the definition of the League's policy regarding the issue of loans. During the year Jeremiah Smith of Boston, previously League commissioner in Hungary, was forced by ill health to resign from the Committee and was replaced by Norman H. Davis, former Under-Secretary of State, who was present at the September session. The Committee had a great deal of important work on hand both in preparation of special actions and in settlement of the League's general policy in the financial field, but did not come to final decisions during the year.

Special mention might be made of the studies undertaken by the Fiscal Committee in its third session in May regarding the apportionment of profits of undertakings operating in several countries, the prevention of double taxation of international trusts and holding companies, and the fiscal clauses to be inserted in the convention on the equitable treatment of foreigners.

This work was largely initiated by Professor Thomas S. Adams, Treasury Department advisor, a member of the committee since the beginning; was made possible by a grant from the Rockefeller Foundation, and was under the direction of Mitchell B. Carroll, formerly of the Department of Commerce.

COMMUNICATION AND TRANSIT

Calendar Reform.—The United States was represented at the Fourth General Conference on Communications and Transit Oct. 12-24. The first part of the conference was devoted to the question of calendar reform, when Dr. Charles F. Marvin of the United States Weather Bureau was present, assisted by Col. O. N. Solbert and Meredith M. Stiles, representing the American National Committee. The conclusion was reached that the time was not ripe for modification of the Gregorian calendar, but that the preparatory work should be continued until public opinion becomes more unified. The latter part of the conference was devoted to general transit questions including steps to be taken to maintain international transportation and communication in times of crisis, when Dr. Charles F. Lyon, Commercial Attaché at Berne, represented the government.

Aviation.—The committee of experts on engine rating rules for airplanes and dirigibles met April 20-24, with John J. Ide, Technical Assistant for Europe of the National Advisory Committee for Aeroplanes, representing the government. The committee had previously decided that air armaments should be limited by number, aggregate motor power and aggregate number of dirigibles, but had established no rule regarding the measurement of that motor power. The committee decided that the best criterion would be "rating by volume swept" and by total weight which would not impair the improvement of engines, but might induce constructors to keep down their

SOCIAL AND HUMANITARIAN QUESTIONS

Liberia.—The question of administrative and financial assistance to be extended to Liberia to aid in carrying out the reforms suggested by the committee which had investigated conditions of slavery in that country, led the Council in January to create a committee of its members with which the United States, because of its special interest in Liberia, was invited to "take such part as it might deem appropriate." This invitation was accepted and Samuel J. Reber, Jr., Chargé d'Affaires at Monrovia, was named as American representative. The committee drew up the terms under which financial, administrative and health experts were authorized by the Council to proceed to Liberia, and their report was submitted in October to the Council, to the United States, and to Liberia in preparation for a further meeting in January.

Narcotic Drugs.—The United States sent a strong delegation headed by John K. Caldwell of the State Department, to the Conference for the Limitation of the Manufacture of Narcotic Drugs, held in Geneva from May 27 to July 15. This conference led to a convention establishing specific limits on the amounts of drugs which may be manufactured, a method for disposing of seizures, and an international Board of Control. The American delegation, which had withdrawn from the 1925 conference, duly signed the convention with several reservations intended to strengthen it, and with a declaration issued by the State Department expressing the opinion that the Convention marked the greatest forward stride yet made in the opium matter. The United States was also represented by Mr. Caldwell at the conference called by the League in Bangkok from Nov. 9 to 28 to deal with the problem of opium smoking in the Far East. The conference did not accept the American proposal for complete statutory prohibition of the importation, manufacture, sale or use of prepared opium, but adopted an agreement for various limitative ac-

II. INTERNATIONAL SITUATIONS AFFECTING THE U. S.

tions. Apart from government representation, Herbert L. May continued as a member of the Permanent Central Opium Board, attending three of the four sessions held during 1931 to study the statistics and trend of the world's drug problem.

Public Health.—American cooperation in the League's health work continued during 1931 with the attendance of Surgeon-General Cumming at the seventeenth session of the Health Committee from May 4-8. The committee discussed questions of cooperation in the field of public health with Liberia, China and Bolivia, the work of the Leprosy Commission, and the general work of the health organization since the last session. The government was also represented by Surgeon J. G. Townsend as observer at the European Rural Hygiene Conference from June 29 to July 7. This was the first time an international conference of hygienists, engineers, agriculturists and administrators had met to discuss the welfare of rural populations, considering such questions as the training of sanitation officers, the establishment of schools, the cost of rural medical service, rural housing and rapid transport. On the financial side, the International Health Board continued its grants to the League of something like \$140,000 annually; Mrs. David Simmons, of Boston, gave \$6,000 for initial expenses and \$6,500 annually for seven years for malaria research work in Greece in connection with the plan of sanitary reorganization being worked out by the Health Committee, and the Philippine Government made a contribution of \$2,000 to the expenses of the Singapore Bureau of Epidemiological Intelligence.

Intellectual Cooperation.—In the field of intellectual cooperation American contacts were further extended when the Council in January appointed as members of the subcommittee for the instruction of youth in the aims of the League, Dr. Stephen P. Duggan, Director of the International Institute of Education, and Miss Helen Clarkson Miller, Head of the Educational Depart-

ment of the League of Nations Associations or alternate. The Council also appointed Dr. Thomas Finegan, President of the Eastman Teaching Films, Inc., to the Governing Body of the Institute of Educational Cinematography to replace Dr. Vernon Kellogg. At the thirteenth session of the general Committee on Intellectual Cooperation, Dr. R. A. Millikan was replaced by Dr. James T. Shotwell.

WORLD COURT AND INTERNATIONAL LAW

No formal change in the relationship of the United States to the Permanent Court of International Justice took place during 1931. The World Court protocols had been signed Dec. 9, 1929; they had been submitted to the Senate for ratification Dec. 10, 1930; and were discussed by the Senate Foreign Relations Committee in December, 1931. During that time Elihu Root, who had assisted in drafting the protocol for American accession, had been heard by the Committee, but final action was postponed due to the departure to the Disarmament Conference of Senator Swanson, ranking Democratic member. Throughout the year Frank B. Kellogg continued as judge of the Court, taking part in the consideration of four advisory opinions including that on the proposed customs régime between Germany and Austria.

In connection with the codification of international law, the American government, in reply to a general questionnaire sent to all governments for their views, expressed the opinion in a letter dated June 23 that the work of codification initiated by the League Assembly in 1924 and carried forward by the international conference at The Hague in 1930 should be continued. This letter contained a warm endorsement of the value of the work done at this first conference, recalled the signature by the United States of one of the conventions, and gave detailed suggestions for the continuation of the work.

THE INSTITUTE OF POLITICS

THE INTERNATIONAL LABOR OFFICE

American relations with the International Labor Organization advanced but slightly during 1931. The Department of Labor was represented at the Fourth International Conference of Labor Statisticians from May 20-23 by Ethelbert Stewart the first time that the government had attended a labor statisticians' conference and one of the few times that the government had been officially represented in the activities of the Labor Organization. On May 20 it was announced in Washington by the Secretary of Labor that the United States would be represented at the general conference of the labor organization, particularly in connection with the proposed revision of the Washington Night Work Convention, but later this decision was changed. Certain American views were, however, presented by Eliza-

beth Christman, Secretary of the National Women's Trade Union League. At the same time unofficial American interest in the work of the Labor Organization continued. The American Federation of Labor at its fifty-first annual convention at Vancouver, passed a resolution that the executive council enter into negotiations with the government to have unofficial American observers stationed in the Labor Office in Geneva in order both to give and to receive information. At a conference of industrial relations officials June 29, Arthur H. Young, of Industrial Relations Counselors, Inc., of New York, took a leading part, while various representatives of American agencies such as the Metropolitan Life Insurance Company, and many American professors and students, made use of the research information facilities available at the Labor Office.

THE INSTITUTE OF POLITICS

BY WALTER WALLACE McLAREN

PROFESSOR, WILLIAMS COLLEGE

ECONOMIC PLANNING

International.—The eleventh session of the Institute of Politics at Williamstown, Mass., held in the month of August, 1931, chose as its main topic for discussion the stabilization of industry and the economic planning necessary thereto. Economic planning has as its objective the equilibrium of production and demand at some definite price level satisfactory alike to producer and consumer. Such planning cannot in its nature be limited to a national scale partly because of differences of climate, natural resources and the extent of the demand for those natural resources in different national states. Nor may a country produce enough of a given article to satisfy its own requirements; for example, sugar in the United States and wool in England. The control of production, demand and price levels is,

therefore, a matter of international planning. This observation particularly applies to those countries which use quantities of a product it does not produce either for climatic reasons or because of want of natural resources.

National.—Nevertheless, economic planning is partly a domestic problem in the case of commodities partly produced at home, and always is a domestic problem in the case of commodities produced in sufficient quantities to satisfy the home market. National planning was considered by the Institute from the point of view of democratic and state socialistic political regimes. In a democracy, the force to put any plan into effect does not exist and certainly could not exist under the Constitution of the United States. Likewise the information as to the magnitude of demand or supply and the cost of producing

II. INTERNATIONAL SITUATIONS AFFECTING THE U. S.

any needed supply does not exist even in the United States.

Discussion.—It was to this complicated subject of economic planning that the speakers and members of the Institute devoted most of their study. All were agreed that the business depression, with its unemployment and over-production of goods in relation to demand at profitable prices, called for economic planning on the widest scale. All were agreed also that the present capitalist organization of society, functioning through competition and changes in the price level, permitted, if it did not cause, the depression. International economic planning seemed to be compelled to wait upon world security from war and from national suspicion. The Institute concluded, therefore, that stabilization was a long way off in the future but that it was an end to which the modern world must progress if industrial civilization were to serve the purpose of the modern world.

LECTURES

The convocation address at the opening of the Institute session was delivered by former Secretary of War Newton D. Baker of Cleveland who spoke on National Economic Planning. The other public lectures through the session were as follows: The Economics of Fascism by Dr. Villari of Rome; The Economics of Communism by Dr. George S. Counts of New York; The Economics of Capitalism by Malcolm C. Rorty of New York; A British View of the Capitalist System by Professor Theo-

dore E. Gregory of Manchester, England; The Economic Problems and Policies of Present-day Germany by Dr. Herbert von Beckerath of Bonn, and France and the World Economic Crisis by Charles A. LeNeveu of Paris.

ROUND TABLES

The following is a list of the round table subjects, with their respective leaders: The Future of Democracy, Professor Arthur N. Holcombe, Harvard University; Social Psychology of International Conduct, Professor G. M. Stratton, University of California; International Problems of Commercial and Financial Policy, Professor Jacob Viner, University of Chicago; The Future of the British Commonwealth of Nations, Dean P. E. Corbett, McGill University; The Distribution of Wealth and Income, Professor T. E. Gregory, London School of Economics; The Political Situation in Western Europe, Dr. William E. Rappard, School for Higher International Studies, Geneva.

SPECIAL CONFERENCES

Special general conferences were held on the following subjects: Public Opinion and Disarmament, Chairman, James G. McDonald, New York City; The Pact of Paris, Chairman, Professor George H. Blakeslee, Clark University; India and the Coming Round Table Conference, Chairman, Professor George H. Blakeslee, Clark University; Proposals for World Economic Planning, Chairman, Professor George H. Blakeslee, Clark University.

THE INSTITUTE OF PACIFIC RELATIONS

BY WILLIS J. ABBOT

CONTRIBUTING EDITOR, *Christian Science Monitor*

FOURTH BIENNIAL SESSION

The fourth biennial conference of the Institute of Pacific Relations was held at Shanghai, China, Oct. 21-Nov. 2, 1931. The next conference will be held at Honolulu in 1933. It

had been arranged that the 1931 conference should be held at Hangchow, and the city had made preparations at considerable expense. But the controversy between China and Japan, which became acute in Sep-

THE INSTITUTE OF PACIFIC RELATIONS

tember with the seizure by the Japanese of strategic points in and around Mukden, Manchuria, aroused doubt as to the wisdom of holding the conference at all. It was questioned whether Japanese and Chinese groups could meet in amicable discussion, and it was seriously doubted whether in a town so thoroughly Chinese as Hangchow it would be possible for the authorities to afford complete protection to Japanese delegates. Accordingly, after prolonged discussion and delay, it was determined to remove the site of the conference to Shanghai where it found accommodations in the International Recreation Club on Bubbling Well Road, within the limits of the international settlement.

MEMBER GROUPS

In all there were 179 persons in attendance, 140 of whom were members of the conference. The member groups in attendance were: Australia 9, Canada 11, China 38, Great Britain 20, Japan 19, New Zealand 6, Philippines 5, United States 26. There were also observers from the Netherlands 1, International Labor Office 3, and League of Nations 2. For the first time the Philippines appeared as a full member group. Twenty-four of the members were women. The total attendance was less than in the conference two years earlier in Kyoto, possibly because the controversy between China and Japan led to doubt as to whether the conference would be held at all, but largely because financial conditions throughout the world required many eminent men of affairs to remain at the seat of their interests.

DISCUSSIONS AMICABLE

Despite the exceedingly threatening international situation in the Far East, the conference passed off without any untoward incident whatsoever. There had been prophecies that the Japanese members might be insulted or even attacked in so strongly Chinese a city as Shanghai. Certain factions of the Kuomintang denounced the Institute as imperialist and wholly dominated by for-

eigners. But the Nationalist Government supported the Institute, and despite the very grave situation in Manchuria the members from Japan and from China met amicably and discussed questions bearing intimately upon the Manchurian situation with scarcely a note of hostility. The one concession that was made to the menace of the Manchurian quarrel was the removal of the meetings to Shanghai, but one full day was given to a meeting at Hangchow, which went off with the utmost smoothness.

ADDRESS OF DR. HU SHIH

The presiding officer of the conference was Dr. Hu Shih, Chinese philosopher, scholar and poet. "Dare we give up thinking in the face of great emotional upheavals in times of national crisis?" he asked. "Is the ideal and method of the Institute only good for peaceful times, when people can afford to be polite to one another? It is not saying too much that the opening of this Conference today will long be remembered, not only in the annals of our Institute, but also in the history of all sister institutions of an international nature, as having set up a splendid precedent that all who in peaceful times pride themselves as being internationally-minded, must not desert the ideal of calm thinking, patient research, and open-minded discussion, at a time when folly reigns and passions carry the day. To think for a nation or nations is a most sacred trust and a most perilous task. It is a task in which, in the words of a Chinese sage, 'one word may build up a nation, and one word may ruin an empire'. We are here neither to laugh nor to cry, but to understand. We are here, not to teach, but to think together and exchange our ideas with one another. It is only in the spirit of the humble seeker after truth that we may hope to achieve at least a small measure of success."

ROUND TABLE TOPICS

The method of the Conference of the Council on Pacific Affairs is to discuss matters of importance to the

II. INTERNATIONAL SITUATIONS AFFECTING THE U. S.

Pacific territory in "round tables," the discussions being led by experts, the meetings being open only to members of the Conference, and the press being excluded in order that there may be the utmost freedom of expression. Important contributions to the discussion were given to the press in official communiques. This method was followed at Shanghai. On the first four days the subjects of discussion were: "Trade Relations in the Pacific" and "Chinese Economic Development". Tariffs and silver came in for a full discussion at these meetings, and the latter formed the subject of a special round table. Much material was produced which should be of value to the Chinese in developing agricultural resources as yet unutilized. The second week began with "Labor Problems and Standards of Living" followed by "Diplomatic Machinery in the Pacific" and "Foreign Relations of China". Under the latter two topics the situation in Manchuria came in for a thorough discussion, and it is a tribute to the spirit of those who attended the meetings that the Japanese and Chinese discussed these issues calmly, helpfully, and constructively. The construc-

tive suggestions springing out of these discussions were that there might be a branch of the Secretariat of the League of Nations in the Orient for the investigation of mooted questions, and that there might be set up a Joint International Commission similar to that which has for so many years served to determine issues between the United States and Canada speedily and effectively. No decision, of course, on any matter was reached, as it is the policy of the Institute only to discuss, never to take a vote, never to proffer any recommendations.

RESULTS OF THE MEETING

The net result of this fourth council was to open to many who had never before visited the Far East an opportunity to see and to study its principal countries, and to listen to expert and well-informed discussions of the problems confronting the peoples of that region. The 150 attendants who gave time and thought to the sessions of the Institute returned to their individual homes better equipped to understand and to discuss Far Eastern affairs than could otherwise have been possible.

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

(For further information, the reader may address the following organizations)

GENERAL

ACADEMY OF POLITICAL SCIENCE IN THE CITY OF NEW YORK, Fayerweather Hall, Columbia University, New York City.

AMERICAN PEACE AWARD, 565 Fifth Ave., New York City.

AMERICAN PEACE SOCIETY, 734 Jackson Place, Washington, D. C.

AMERICAN SOCIETY OF INTERNATIONAL LAW, 2 Jackson Place N. W., Washington, D. C.

ARBITRATION SOCIETY OF AMERICA, INC., 342 Madison Ave., New York City.

CARNEGIE ENDOWMENT FOR INTERNATIONAL PEACE, 2 Jackson Place N. W., Washington, D. C.

COUNCIL OF ARBITRATION, 342 Madison Ave., New York City.

COUNCIL ON FOREIGN RELATIONS, INC., 25 West 43rd Street, New York City.

FOREIGN POLICY ASSN., 18 East 41st Street, New York City.

INSTITUTE OF CURRENT WORLD AFFAIRS, 522 Fifth Ave., New York City.

INTERNATIONAL LAW FOUNDATION, 165 Broadway, New York City.

INTERNATIONAL REFORM FEDERATION, 206 Pennsylvania Ave. S. E., Washington, D. C.

LEAGUE OF NATIONS NON-PARTISAN ASSN., 6 East 39th Street, New York City.

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

LEAGUE OF NATIONS UNION, 70 Fifth Ave., New York City.
 NATIONAL COUNCIL FOR PREVENTION OF WAR, 532 17th Street N. W., Washington, D. C.
 PEOPLE'S RECONSTRUCTION LEAGUE, 35 B Street N. W., Washington, D. C.
 WOMEN'S INTERNATIONAL LEAGUE FOR PEACE AND FREEDOM, 15 East 40th Street, New York City.
 WOMEN'S PEACE SOCIETY, 20 Vesey Street, New York City.
 WOMEN'S PEACE UNION, 39 Pearl Street, New York City.
 WORLD PEACE FOUNDATION, 40 Mount Vernon Street, Boston, Mass.

REGIONAL

AMERICAN ASIATIC ASSN., 501 Fifth Ave., New York City.
 ARMENIA-AMERICA SOCIETY, 289 Fourth Ave., New York City.
 AMERICAN COMMITTEE FOR ARMENIAN INDEPENDENCE, 1 Madison Ave., New York City.
 CHINA SOCIETY OF AMERICA, 19 West 44th Street, New York City.

COMMITTEE ON COOPERATION IN LATIN AMERICA, 419 Fourth Ave., New York City.
 ENGLISH-SPEAKING UNION OF THE UNITED STATES, 19 West 44th St., New York City.
 FAR EAST CONFERENCE, 25 Beaver Street, New York City.
 FRENCH INSTITUTE OF THE UNITED STATES, 22 East 60th Street, New York City.
 FRIENDS OF FREEDOM FOR INDIA, 799 Broadway, New York City.
 FRIENDS OF IRISH FREEDOM, 280 Broadway, New York City.
 JAPAN SOCIETY, INC., 36 West 44th Street, New York City.
 NATIONAL ASSN. FOR PROTECTION OF AMERICAN RIGHTS IN MEXICO, 17 Battery Place, New York City.
 NETHERLANDS ASSN. OF NORTH AMERICA, 179 S. Trenchard Street, Yonkers, N. Y.
 PAN-AMERICAN SOCIETY OF THE UNITED STATES, INC., 67 Broad Street, New York City.
 PAN-PACIFIC UNION, Honolulu, Hawaii.

PART TWO

AMERICAN GOVERNMENT

DIVISION III

THE NATIONAL GOVERNMENT

PERSONNEL OF CONGRESS

By MILTON CONOVER

PROFESSOR, YALE UNIVERSITY

COMPOSITE PERSONALITY OF THE SENATE

General.—While the Senate of the United States in 1932 is composed of varying types of individuals, constituting opposites and foils to each other in personality as well as in the political drama, the 96 senators as a body form a composite personality that was tested severely in 1931 by the economic depression and its world reverberations. Its wisdom was challenged, and its response to that stimulus revealed its corresponding resources.

Age Data.—In the seasoned wisdom that finds itself greatest in ripened age, the contemporary Senate realized steadying influences, four senators having exceeded the Biblical allotment. They are John B. Kendrick, Ex-Governor and Elder Statesman of Wyoming, born in 1857; Carter Glass, Virginia gentleman who romped before the Civil War and recently testified he has never drunk whiskey, and Thomas J. Walsh of Montana and Duncan U. Fletcher of Florida, both born during the last days of the Reconstruction régime in 1872. Eighteen senators received their first contacts with social forces during the War and Reconstruction periods, having been born during the

years 1860-1865. They assemble from a wide geographical distribution. The Reconstruction period, 1866-1876, witnessed the birth of 44 future senators of the Seventy-Second Congress, who, also, were assembled from many sections of the Union. Twenty-seven states had senators from the ranks of the more youthful gentlemen born since 1876, to whom the sad days of the Civil War and Reconstruction Period have not been the poignant reality they have to their elders, and consequently not quite the stimulus to sectional consciousness. Three of these senators were less than forty years old,—H. P. Long, Louisiana; Gerald P. Nye, North Dakota, and Robert M. LaFollette, Jr., Wisconsin, born in 1895 and elected in 1925 to fill the unexpired term of his father. The age of three of the senators remains a mystery, Hattie W. Caraway, Arkansas, who succeeded her late husband; W. Warren Barbour of New Jersey, who took the place of the late Dwight W. Morrow, and the familiar J. Hamilton Lewis of Illinois.

Senatorial Migrants.—Provincialism seems not to have been completely ingrained in the electorates of 29 states, for they elected senators who were not native sons of those states. Fourteen commonwealths sent

PERSONNEL OF CONGRESS

non-natives only to the Senate, viz., Colorado, Connecticut, Delaware, Florida, Idaho, Montana, Nebraska, Nevada, New Hampshire, New Mexico, New York, North Dakota, Oklahoma, and Washington. Fifteen states choosing one of their senators from the body of migrants were: Arizona, California, Illinois, Indiana, Iowa, Kansas, Maine, Michigan, Minnesota, Missouri, Pennsylvania, Rhode Island, South Dakota, Tennessee, and Wyoming. Of these 29 migrants, three were born in foreign countries: James Couzens, Michigan, a native of Ontario; Robert F. Wagner, New York, a native Hessian, and James J. Davis, Pennsylvania, born in South Wales.

College-bred Senators.—The American Senate of 1931 seemed to constitute another retort courteous to foreign commentators who are fond of chiding Americans because of the "pathetic lack of interest in politics on the part of American college students." Now, 70 of the 96 senators, or 72.9%, went to standard colleges, excluding Jesse H. Metcalf, Rhode Island, who studied at Yorkshire College in England. This would indicate that American colleges have failed entirely to kill all student interest in the responsibilities of active citizenship. A closer scrutiny of the collegiate records of senators reveals that the University of Michigan leads all competitors in the production of senators with six,—Ashurst, Arizona; Waterman, Colorado; King, Utah; Copeland, New York; Bulow, South Dakota, and Vandenberg, Michigan. Harvard University wins second place with Costigan, Colorado; Bingham, Connecticut, who also went to Yale; Hale, Maine; Cutting, New Mexico, and Bulkeley, Ohio. The University of Virginia,—long a center of political thought—ties with Yale for third honors with Robinson, Arkansas, the Democratic candidate for vice-president in 1924; Lewis, Illinois; Barkley, Kentucky, and Swanson, Virginia. Yale was represented by one of her former students who later had studied at Harvard and still later had taught at Yale,—Hiram Bingham;

and by Sheppard, Texas; Carey, Wyoming, and Walcott, Connecticut. Other universities represented in this Senate by more than one former student were Stanford, California and Oklahoma. Several of the senators had studied at more than one institution, somewhat after the fashion of the German university student who spends his wandering years in learning various sections of his own country and their local peoples as well as in learning his profession. The champion *wanderungstudent* in the Senate in 1931 seems to have been Dr. Henry D. Hatfield, West Virginia, who procured his A.B. at Franklin College, New Athens, O., then proceeded to get his M.D. at the University of Louisville, with post-graduate study at New York University, the New York Polyclinic Medical School and Hospital, and at Cornell University Medical College.

College Degrees.—The collegiate and university degrees most favored by the senators were various. The Bachelor of Arts degree graced 28 of them, and the Bachelor of Laws was held by 29. Other baccalaureate degrees that had been won included the Bachelor of Philosophy, of Science, and Bachelor of Literature degrees. Four senators had attained to the Master of Arts honor, while one, Bingham, had accomplished the Doctorate of Philosophy.

College trusteeships were held by 10 of the senators.—Bankhead, a trustee of the University of Alabama; Townsend, of Washington College in Maryland, and of the American University in Washington, D. C.; Dickinson of Cornell College in Iowa; Capper of the Kansas State Agricultural College; Keyes of the University of New Hampshire; Bailey, of Chowan College and of the University of North Carolina; Reed of the University of Pittsburgh; Metcalf of Brown University; Austin of the University of Vermont; and Cutting, a regent of the New Mexico Military Institute. Likewise, Carter Glass had been a member of the Board of Visitors of the University of Virginia, and Howell of Nebraska had been an

III. THE NATIONAL GOVERNMENT

official visitor at the United States Naval Academy.

Professions.—In professional life, sixty of the 1931 senators, or 62.5%, were classified as lawyers. Business, journalism, and farming each claimed seven, the business group including four bankers and two manufacturers. Two were physicians and one a dentist. James J. Davis was an iron worker; Simeon D. Fess, a college president; Hiram Bingham, a college professor, and Peter Norbeck a well driller.

Governmental and political experience of the Senate as a body was thorough, 80 members having had considerable active experience in some form of state, territorial or local politics before entering Congress. City politics had been an early training school for 27 senators, of whom 11 had served as mayors of municipalities. County government had trained 22, while state and territorial affairs had attracted 60 senators in their younger years, of whom 30 had served as members of legislatures, and 15 as governors of commonwealths. National public positions had been filled by 10 senators, two of whom had been Cabinet members: Former Secretary of the Treasury, Carter Glass, Virginia; and former Secretary of Labor, James J. Davis, Pennsylvania. National political party conventions had at sometime enlisted the membership of 28 future senators. The House of Representatives had furnished parliamentary training for twenty-eight senators, while the Senate itself had afforded experience to all but six of its 1931 enrollment. Those who had the earliest experience in the Upper House were Reed Smoot, Utah, who first entered the Chamber in 1903; Thomas P. Gore, Oklahoma, in 1907; Wesley L. Jones of Washington; Duncan U. Fletcher of Florida, and Ellison DuRant Smith of South Carolina, all appearing in 1909.

War Service.—Response to the call to arms had been made by 18 of the 1931 senators. Some had served for more than one war, but there were no remaining veterans of the

War between the states. Seven had served for the Spanish War, two for the Mexican Border Expedition of 1916, and 15 for the World War. Matthew M. Neeley, West Virginia, served as a private of infantry during the Spanish War. The rank of lieutenant-colonel had been attained by three senators, major by five, captain by five, and lieutenant by three. J. Hamilton Lewis, Illinois was "named on staff of General Brooke, in Cuba, as inspector general; transferred to staff of Gen. F. D. Grant, Porto Rico, later Philippines, 1898-1900." During the World War, he was "designated to special war work as commissioner for War Department and President of the United States, in matters touching prosecution of war." He "reported in France to Gen. Pershing and assigned personally to aid Gen. George Bell (unoff.); started to return to U. S. on ship *Mt. Vernon*, in charge of wounded soldiers; torpedoed at sea, put back to Brest, and after recovering from results of torpedoing, resumed war duties." (*Who's Who in America*.)

Religious faith was designated by 45 senators, or 46.8%, in 1931. These religious affiliations were distributed over 11 distinct denominations, the Methodist Episcopal Church leading in membership with 10, besides two members of the Methodist Episcopal Church, South, a separate denomination. The Protestant Episcopal Church was represented by nine communicants, the Presbyterians by six, the Congregationalist by five, and the Baptist by four members. There were two senators each affiliated with the Roman Catholic, Lutheran, Unitarian, and Latter Day Saints (Mormon) Churches, while one senator designated his religion simply as "Protestant."

Membership in lodges and fraternities was acknowledged by 33 different senators in 1931. Of these brethren, 29 were Masons, among whom, seven were Knights of the Mystic Shrine, two were Knights Templar, seven were Masons of the Thirty-second Degree, and two were Masons of the Thirty-third Degree.

PERSONNEL OF CONGRESS

The Benevolent and Protective Order of Elks were represented by 12 senators. The Independent Order of Odd Fellows numbered eight; the Knights of Pythias, seven; and the Woodmen, four. The Loyal Order of Moose,—so close to the heart of Senator Davis—numbered three. There was at least one senator each affiliated with the Improved Order of Red Men, the United Workman, the Eagles, and the Foresters.

Authorship.—In authorship of published books, the Senate in 1931 was well recognized. The works of Senator Bingham and of Senator Fess have been commented upon heretofore in *THE AMERICAN YEAR BOOK, 1929*. With these authors may be associated Senator Lewis of Illinois who has written or collaborated in the writing of several books, *e.g. Hand Book on Elections; Constitutions, Statutes and their Construction; Two Great Republics—Rome and the United States; Removal of Causes from State to U. S. Courts;* etc. Senator Vandenberg of Michigan, who is an editor by profession, is the author of *Alexander Hamilton, the Greatest American, 1921; If Hamilton Were Here Today, 1923;* and *The Trail of a Tradition, 1925*. He is likewise the producer of several booklets and magazine articles on various subjects. Senator Hawes of Kentucky is author of *The Dog, The Black Bass, and Conservation*. Senator Copeland of New York, a former professor of ophthalmology at the University of Michigan, wrote a textbook on *Refractions*; and another entitled *The Health Book*, published in 1924.

PERSONNEL OF THE HOUSE OF REPRESENTATIVES

New Members.—Monday, December 7, 1931, being the day fixed by the Constitution of the United States for the assembling of the Seventy-Second Congress, the first roll call disclosed the presence of 433 of the 435 members. Subsequent to the Congressional election of November, 1930, 12 Representatives-elect of the Seventy-Second Congress either resigned or died. Their places were

filled by successors in every instance but one, that one being the vacancy caused by the death of Representative Fletcher Hale Oct. 22, 1931. Notable among these 12 was the late Speaker, Nicholas Longworth, Ohio, who died April 9, 1931, and who was succeeded by John B. Hollister.

Women Members.—Six women are included in the House,—Mary T. Norton, New Jersey; Florence P. Kahn, California; Edith Nourse Rogers, Massachusetts; Ruth Bryan Owen, Florida; Ruth Baker Pratt, New York, and Effiegene Wingo, Arkansas.

Garner, Speaker.—The party alignment giving the Democratic Party members a majority, Representative John N. Garner, of Texas, was elected the first Democratic Speaker of the House since 1919, defeating Bertrand H. Snell of New York and George J. Schneider of Wisconsin. Mr. Garner received 218 votes to Mr. Snell's 207 and Mr. Schneider's five.

Native Sons.—The National viewpoint of the House collectively is assured in part by the fact that 125 of the members were born outside of the state that they represent. All but 10 of the states sent at least one non-native to the House. The commonwealths sending the greatest number of non-natives were New York, 13; Michigan, eight, and Oklahoma and Texas seven each. Massachusetts, New Jersey, Pennsylvania, and Iowa each sent six migrants to the House, while Illinois sent five. Four States each sent four non-natives,—Minnesota, Kansas, Colorado, and California. Six states elected their entire House delegations from their citizens-by-choice element, Washington electing her five representatives from her non-native population, Colorado four, South Dakota three, Idaho two, and Wyoming and Nevada one each. The number of foreign-born Representatives has increased from 12 to 15 within the past seven years. The nine States selecting all of their representatives from their own native-born constituency were Arizona, Delaware, Georgia, Louisiana, Maine, Mississippi, New Mexico, Vermont, Virginia, while the birthplace of a

III. THE NATIONAL GOVERNMENT

part of the Representatives of one other state seems not to be revealed officially in the Congressional Directory.

Age.—Memories of the War between the states are still prevalent in the House, as 18 of the members were born before that era; 30 were born during the War; and 163 were born during the Reconstruction Period. The post-War group is increasing in number, however, as there are 192 who were born since 1876. Of these, there were 57 born in 1890 or thereafter. Three others were born during the present century,—Hartley, New Jersey; Boileau, Wisconsin, and Dies, Texas. Of those destined to maintain the maxim, "Old men for council," may be mentioned C. C. Dickinson, Missouri, born in 1849; Henry St. George Tucker, Virginia, born in 1853; John E. Weeks, Vermont, and C. B. Timberlake, Colorado, born in 1854. There are Representatives who seem not to disclose their ages.

Government Experience.—The favorite old-time assurance, "never before held public office," has virtually disappeared from Congressional biographies. Practically all of the Representatives of the Seventy-Second Congress have held public office. In city affairs 135 Representatives had held office. The same number had served in county politics, while 237 had held state political positions not including the office of prosecuting attorney. Previous Congresses had included 355 members of the Seventy-Second Congress, while thirty-nine Representatives had held other national positions than that of Congressmen. For example, Representative Timberlake, Colorado and Colton, Utah had been receivers of the General Land Office, and Smith, Idaho, and Evans, Montana had been registers of the same bureau. Yates of Illinois and Sanders of New York had had long service as Collectors of the Internal Revenue. Lewis of Maryland had been a member of the U. S. Tariff Commission. Andrew of Massachusetts had held several positions in the public finance, including Directorship of the Mint, member-

ship of the National Monetary Commission and Assistant Secretaryship of the Treasury. Rev. C. A. Eaton of New Jersey had served with the U. S. Shipping Board. LaGuardia, New York, had been a consular agent and also an interpreter. Prof. Charles West, Ohio, had been a vice-consul, while Representative Beck had been both Solicitor-General and Assistant Attorney-General. Buchanan, Texas, had been Postmaster-General.

War Records.—The number of representatives with war records is greatly increased, there being 89 with war service experiences besides two who served in the military and naval services without being necessarily involved in the Wars. This represents an increase of 25 war veterans in the House within a period of seven years. These 89 include two women,—Ruth Bryan Owen, who was a war nurse, and Edith Nourse Rogers, who was a Red Cross worker. Of these 89 warriors, 70 served for the World War, 15 for the Spanish War, and four served in both emergencies. The World War veterans included six who also responded to the call for service on the Mexican Border in 1916. J. Q. Tilson likewise served at the Mexican Border as well as in the Spanish War forces. The military ranks held by these Congressmen while in the war services included nearly every grade of soldier from private to major-general, there being 13 of the former, and one of the latter. The rank having the greatest number of members in the House to its credit is that of captain which claims 19, while that of lieutenant has 10.

Professions.—Law still holds sway as the widest avenue to a Congressional career, there being 267, or 61.3 per cent of the present House who proclaim that calling as their dominant interest in non-political life. Business claims 66 members, including 10 manufacturers, seven bankers, and two publishers. Journalism ranks third with 16, while farming claims a decided increase recently with 14 representatives. Other professions entering the House include five physicians and two dentists; six

PERSONNEL OF CONGRESS

educators, two of whom are, or were college teachers. There are three building constructionists, two mining engineers, and one miner, railway engineer, clergyman, painter and Army officer.

Education.—The number of congressmen in 1932 having had training in standard colleges or universities is 290 or 66.3 per cent. This is exclusive of the 32 who attended normal colleges and schools, and the 16 who attended non-degree granting business colleges and commercial schools. Of these, 141 are Democrats and 141 Republicans. Ninety-seven representatives apparently did not attend standard colleges, while several attended non-standard or unrecognized institutions or non-degree granting establishments. The total number of different standard colleges and universities represented in the House is 125, which number insures a broad national background to the Congress as a body. Furthermore, there were 113 congressmen who attended more than one college or university, thereby obtaining a comparative viewpoint of social problems, it would seem. Harvard University leads the list of congressional sons with 23, while Yale follows with only 13, Michigan ranking third with 11. Cumberland University in Tennessee, which maintains a well advertised one-year law school course leading to the degree of Bachelor of Laws, has 10 former students in the House, while the University of Virginia,—still exemplifying the Jeffersonian tradition of education and political science—is represented by the same number. The University of Texas ties with the University of Missouri with eight sons each, while George Washington University nearly rivals them with seven. There are six House members from each of the following Universities;—Alabama, Columbia, Georgetown, Washington and Lee, Chicago, Iowa, Minnesota, Pennsylvania. Likewise, five members were trained in Fordham, Mercer, Wisconsin, Maryland, Mississippi, and in North Carolina Universities. There are four each from Amherst, Stanford, Nebraska, California, Georgia, Illinois, Ohio

State, New York University, and Dickinson College in Pennsylvania,—the quaint classical center that still boasts of Chief Justice Taney and President Buchanan. Two of the congressmen studied at European universities,—Johnson, Oklahoma, who spent some time at the University of Clermont in France; and Moore, Ohio, who studied at the University of Munich. Eaton of New Jersey took degrees at Acadia University and McMaster's University in Canada. Of congressmen who went to standard colleges or universities, 227 obtained degrees. The degree Bachelor of Laws was conferred upon 150, while that of Bachelor of Arts has graced 112,—several acquiring both degrees. Twenty-six members attained to the advanced degree, Master of Arts, while nine accomplished the doctorate *in cursu*.

Church Affiliations.—In religious membership, the House contains 232 communicants, or 53.5 per cent, representing 17 denominations. The Methodist Episcopal Church has the largest number of communicants with 45 besides 12 members of the Methodist Episcopal Church, South, which is a separate denomination. The Presbyterian Church is represented by 43 members, the Baptist by 33, and the Protestant Episcopal Church by 31. The next strongest group is the Lutheran Church which has 16 members, and the Roman Catholic Church which has 15, while the Congregational and Christian denominations have 12 members each. There are smaller representations in the remaining eight denominations.

Fraternal Affiliations.—There are 210 different representatives who acknowledge membership in some fraternal organization, of whom 181 are Masons, 64 having achieved knighthood in the Mystic Shrine, 34 are Knights Templars, 42 Masons of the 32nd degree, and five Masons of the 33rd degree. Exactly 100 House members are affiliated with the Benevolent and Protective Order of Elks; 59 are Knights of Pythias; 58 are Odd Fellows; 34 are Woodmen; and 22 are of the Loyal Order of Moose. Representatives affiliated

III. THE NATIONAL GOVERNMENT

with other lodges include 12 Eagles; nine Red Men; seven Knights of Columbus; six of the Jr. O. U. A. M.; four each of United American Mechanics, Maccabees, and Foresters; two each of the A. O. U. W., B'Nai B'rith, and the O. E. S., and one each of the Heptesophs, Hibernians, I. O. B. B., Samaritans, Sons of America, A. A. O. N. M. S., and the Patriotic Order Sons of America.

Authors.—In the list of authors in Congress may be mentioned Ludlow, Indiana; Cole, Iowa, and Luce, Massachusetts, whose works were commented upon in *THE AMERICAN YEAR BOOK*, 1929. Congressman Luce has written additional volumes on *Electric Railways* and *Legislative Principles*, the latter being the third voluminous work in his series on the art and science of Legislation which has already found a wide acceptance among political scientists and in the universities at large. To this he adds books with the catching titles *Going Abroad?*, and *Writing for the Press*. Cannon of Missouri is the author of *Procedure in the House of Representatives*, *Convention and Parliamentary Manual* and similar standard books. Dallinger of Massachusetts, who has written much since his indulgence in political essays as a student of Professor Albert Bushnell Hart of Harvard, still carries on. His work on *Nominations for Elective Office in the United States*, published

in 1897, is still regarded as the standard work on that subject. Whitley of New York wrote treatises of the Law of Arrest; Law of Bills, Notes, and Checks, timely subjects of crime and depression. Cable of Ohio, too, wrote on a timely subject—that of *Rights and Responsibilities at Grade Crossings*. To the list of books by Beck of Pennsylvania may be added a volume entitled *May It Please the Court*. Incidentally, the author has been elected to membership in the Shakespeare Society of Philadelphia. Henry St. George Tucker of Virginia wrote a volume on *Limitation on the Treaty-Making Power*, as well as many others previously noted in *THE AMERICAN YEAR BOOK*. Another Virginia Congressman, Patrick Henry Drewry, is the author of a *Story of a Church*.

Personal Distinctions.—Many members of the House in the Seventy-Second Congress have been noted for personal distinctions. For instance, William W. Hastings of Oklahoma, "is a Cherokee Indian by blood; was attorney general for the Cherokee Nation from 1891 to 1895; represented the Cherokee Nation in winding up its tribal affairs before the Commission to the Five Civilized Tribes and the departments at Washington since 1890; was national attorney for the Cherokee Tribe from 1907 to June 30, 1914"—says the current *Congressional Directory*.

MEMBERS OF THE SENATE

Compiled from the *Congressional Directory*, Year 1931

Dates show beginning of service in the Senate. Names of Republicans are in Roman type; those of Democrats in *Italic*; Farmer-Labor in *ROMAN CAPS*.

ALABAMA

John H. Bankhead (1931).
Hugo L. Black (1927).

ARIZONA

Henry F. Ashurst (1912).
Carl Hayden (1927).

ARKANSAS

Joseph T. Robinson (1913).
Hattie W. Caraway (1931).

CALIFORNIA

Hiram W. Johnson (1917).
Samuel M. Shortridge (1921).

COLORADO

Edward P. Costigan (1931).
Charles W. Waterman (1927).

CONNECTICUT

Hiram Bingham (1924).
Frederic C. Walcott (1929).

DELAWARE

Daniel O. Hastings (1929).
John G. Townsend, Jr. (1929)

FLORIDA

Duncan U. Fletcher (1909).
Park Trammell (1917)

GEORGIA

William J. Harris (1919).
Walter F. George (1922).

MEMBERS OF THE HOUSE OF REPRESENTATIVES

IDAHO

William E. Borah (1907).
John Thomas (1928).

ILLINOIS

James H. Lewis (1931).
Otis F. Glenn (1929).

INDIANA

James E. Watson (1917).
Arthur R. Robinson (1925).

IOWA

L. J. Dickinson (1931).
Smith W. Brookhart (1922).

KANSAS

Arthur Capper (1919).
George McGill (1931).

KENTUCKY

Alben W. Barkley (1927).
Marvel M. Logan (1931).

LOUISIANA

Edwin S. Broussard (1921).
Huey P. Long (1931).

MAINE

Frederick Hale (1917).
Wallace H. White (1931).

MARYLAND

Phillips L. Goldsborough
(1929).
Millard E. Tydings (1923).

MASSACHUSETTS

Marcus A. Coolidge (1931).
David I. Walsh (1926).

MICHIGAN

James Couzens (1922).
Arthur H. Vandenberg
(1928).

MINNESOTA

Thomas D. Schall (1925).
HENRIK SHIPSTEAD
(1923).

MISSISSIPPI

Pat Harrison (1919).
Hubert D. Stephens (1923).

MISSOURI

Harry B. Hawes (1926).
Roscoe C. Patterson (1929).

MONTANA

Thomas J. Walsh (1913).
Burton K. Wheeler (1923).

NEBRASKA

George W. Norris (1913).
Robert B. Howell (1923).

NEVADA

Tasker L. Oddie (1921).
Key Pittman (1913).

NEW HAMPSHIRE

George H. Moses (1918).
Henry W. Keyes (1919).

NEW JERSEY

Hamilton F. Kean (1929).
W. Warren Barbour (1931).

NEW MEXICO

Sam G. Bratton (1925).
Bronson Cutting (1927).

NEW YORK

Royal S. Copeland (1923).
Robert F. Wagner (1927).

NORTH CAROLINA

Josiah W. Bailey (1931).
Cameron Morrison (1930).

NORTH DAKOTA

Lynn J. Frazier (1923).
Gerald P. Nye (1925).

OHIO

Robert J. Bulkley (1931).
Simeon D. Fess (1923).

OKLAHOMA

Thomas P. Gore (1931).
Elmer Thomas (1923).

OREGON

Charles L. McNary (1918).
Frederick Steiwer (1927).

PENNSYLVANIA

James J. Davis (1930).
David A. Reed (1922).

RHODE ISLAND

Jesse H. Metcalf (1924).
Felix Hebert (1929).

SOUTH CAROLINA

James F. Byrnes (1931).
Ellison D. Smith (1909).

SOUTH DAKOTA

William J. Bulow (1931)
Peter Norbeck (1921).

TENNESSEE

Cordell Hull (1931).
Kenneth McKellar (1917).

TEXAS

Tom Connally (1929).
Morris Sheppard (1913).

UTAH

William H. King (1917).
Reed Smoot (1903).

VERMONT

Warren R. Austin (1931).
Porter H. Dale (1923).

VIRGINIA

Carter Glass (1920).
Claude A. Swanson (1910).

WASHINGTON

Wesley L. Jones (1909).
Clarence C. Dill (1923).

WEST VIRGINIA

Henry D. Hatfield (1929).
Matthew N. Neely (1931).

WISCONSIN

Robert M. LaFollette, Jr.
(1925).
John J. Blaine (1927).

WYOMING

Robert D. Carey (1930).
John B. Kendrick (1917).

MEMBERS OF THE HOUSE OF REPRESENTATIVES

Compiled from the Congressional Directory, Year 1931

Dates show the beginning of service in the House. Name of Republicans are in Roman type; those of Democrats in *Italic*, and of Farmer-Labor in ROMAN CAPS.

ALABAMA

1. John McDuffie (1919).
2. Lister Hill (1923).
3. Henry B. Steagall (1914).
4. Lamar Jeffers (1921).

5. Lafayette L. Patterson
(1928).

6. William B. Oliver (1915).
7. Miles C. Allgood (1923).

8. Edward B. Almon (1915).
9. George Huddleston (1915).
10. William B. Bankhead
(1917).

III. THE NATIONAL GOVERNMENT

ARIZONA

At Large—*Lewis W. Douglas* (1927).

ARKANSAS

1. *William J. Driver* (1921).
2. *John E. Miller* (1931).
3. *Claude A. Fuller* (1929).
4. *Effiegene Wingo* (1930).
5. *Heartsill Ragon* (1923).
6. *D. D. Glover* (1929).
7. *Tilman B. Parks* (1921).

CALIFORNIA

1. *Clarence F. Lea* (1917).
2. *Harry L. Englebright* (1926).
3. *Charles F. Curry* (1931).
4. *Florence P. Kahn* (1925).
5. *Richard J. Welch* (1925).
6. *Albert E. Carter* (1925).
7. *Henry E. Barbour* (1919).
8. *Arthur M. Free* (1921).
9. *William E. Evans* (1926).
10. *Joe Crail* (1927).
11. *Philip D. Swing* (1921).

COLORADO

1. *William R. Eaton* (1929).
2. *Charles B. Timberlake* (1915).
3. *Guy U. Hardy* (1919).
4. *Edward T. Taylor* (1909).

CONNECTICUT

1. *Augustine Lonergan* (1931).
2. *Richard P. Freeman* (1915).
3. *John Q. Tilson* (1915).
4. *William L. Tierney* (1931).
5. *Edward W. Goss* (1930).

DELAWARE

At large—*Robert G. Houston* (1925).

FLORIDA

1. *Herbert J. Drane* (1917).
2. *Robert A. Green* (1925).
3. *Thomas A. Yon* (1927).
4. *Ruth Bryan Owen* (1929).

GEORGIA

1. *Homer C. Parker* (1931).
2. *E. E. Coz* (1925).
3. *Charles R. Crisp* (1913).
4. *William C. Wright* (1918).
5. *Robert Ramspeck* (1929).
6. *Samuel Rutherford* (1925).
7. *Malcolm C. Tarver* (1927).
8. *Charles H. Brand* (1917).
9. *John S. Wood* (1931).
10. *Carl Vinson* (1914).
11. *William C. Lankford* (1919).
12. *William W. Larsen* (1917).

IDAHO

1. *Burton L. French* (1917).
2. *Addison T. Smith* (1913).

ILLINOIS

At large—*Richard Yates* (1919).

William H. Dieterich (1931).

2. *Oscar De Priest* (1929).
2. *Morton D. Hull* (1923).
3. *Edward A. Kelly* (1931).
4. *Harry P. Beam* (1931).
5. *Adolph J. Sabath* (1907).
6. *James T. Igoe* (1926).
7. *Leonard W. Schuetz* (1931).
8. *Peter C. Granata* (1931).
9. *Fred A. Britten* (1913).
10. *Carl R. Chindblom* (1919).
11. *Frank R. Reid* (1923).
12. *John T. Buckbee* (1926).
13. *William R. Johnson* (1925).
14. *John C. Allen* (1925).
15. *Burnett M. Chipfield* (1930).
16. *William E. Hull* (1923).
17. *Homer W. Hall* (1927).
18. *William P. Holaday* (1923).
19. *Charles Adkins* (1925).
20. *Henry T. Rainey* (1923).
21. *J. Earl Major* (1931).
22. *Charles A. Karch* (1931).
23. *William W. Arnold* (1923).
24. *Claude V. Parsons* (1930).
25. *Kent E. Keller* (1931).

INDIANA

1. *John W. Boehne* (1931).
2. *Arthur H. Greenwood* (1923).
3. *Eugene B. Crows* (1931).
4. *Harry C. Canfield* (1923).
5. *Courtland C. Gillen* (1931).
6. *William H. Larrabee* (1931).
7. *Louis Ludlow* (1929).
8. *Albert H. Vestal* (1917).
9. *Fred. S. Purnell* (1917).
10. *William R. Wood* (1915).
11. *Glenn Griswold* (1931).
12. *David Hogg* (1925).
13. *Samuel B. Pettengill* (1931).

IOWA

1. *William F. Kopp* (1921).
2. *Bernhard M. Jacobsen* (1931).
3. *T. J. B. Robinson* (1923).
4. *Gilbert N. Haugen* (1899).
5. *Cyrenus Cole* (1921).
6. *C. W. Ramseyer* (1915).
7. *Cassius C. Dowell* (1915).
8. *Lloyd Thurston* (1925).
9. *C. E. Swanson* (1929).
10. *Fred C. Gilchrist* (1931).
11. *E. H. Campbell* (1929).

KANSAS

1. *W. P. Lamberton* (1929).
2. *U. S. Guyer* (1926).
3. *Harold McGugin* (1931).
4. *Homer Hoch* (1919).
5. *James G. Strong* (1919).
6. *Charles I. Sparks* (1929).
7. *Clifford R. Hope* (1926).
8. *W. A. Ayres* (1923).

KENTUCKY

1. *William V. Gregory* (1927).
2. *Glover H. Carey* (1931).
3. *John W. Moore* (1925).
4. *Cap R. Carden* (1931).
5. *M. H. Thatcher* (1923).
6. *Brent Spence* (1931).
7. *Virgil Chapman* (1931).
8. *Ralph Gilbert* (1931).
9. *Fred M. Vincent* (1931).
10. *Andrew J. May* (1931).
11. *Charles Finley* (1930).

LOUISIANA

1. *Joachim O. Fernandez* (1931).
2. *Paul H. Maloney* (1931).
3. *Numa F. Monet* (1929).
4. *John N. Sandlin* (1921).
5. *R. J. Wilson* (1915).
6. *B. E. Kemp* (1925).
7. *R. L. DeRoven* (1927).
8. *John H. Overton* (1931).

MAINE

1. *C. L. Beedy* (1921).
2. *Donald B. Partridge* (1931).
3. *John E. Nelson* (1922).
4. *Donald F. Snow* (1929).

MARYLAND

1. *T. A. Goldsborough* (1921).
2. *Wm. P. Cole, Jr.* (1931).
3. *V. L. Palmisano* (1927).
4. *J. C. Linthicum* (1911).
5. *S. W. Gambrill* (1924).
6. *David J. Lewis* (1931).

MASSACHUSETTS

1. *A. T. Treadway* (1913).
2. *W. J. Granfield* (1930).
3. *Frank H. Foss* (1925).
4. *Pehr G. Holmes* (1931).
5. *Edith N. Rogers* (1925).
6. *A. Piatt Andrew* (1921).
7. *W. P. Connery, Jr.* (1923).
8. *F. W. Dallinger* (1927).
9. *C. I. Underhill* (1921).
10. *John J. Douglass* (1925).
11. *G. H. Tinkham* (1915).
12. *J. W. McCormack* (1928).
13. *Robert Luce* (1919).
14. *R. B. Wigglesworth* (1928).
15. *J. W. Martin, Jr.* (1925).
16. *Charles L. Gifford* (1922).

MICHIGAN

1. *Robert H. Clancy* (1927).
2. *Earl C. Michener* (1919).
3. *Joseph L. Hooper* (1925).
4. *John C. Ketcham* (1921).
5. *Carl E. Mapes* (1913).
6. *Seymour H. Person* (1931).
7. *Jesse P. Wolcott* (1931).
8. *Michael J. Hart* (1931).
9. *J. C. McLaughlin* (1907).
10. *Roy O. Woodruff* (1921).
11. *Frank P. Bohn* (1926).

MEMBERS OF THE HOUSE OF REPRESENTATIVES

12. W. Frank James (1915).
13. C. J. McLeod (1923).

MINNESOTA

1. Victor Christgau (1929).
2. Frank Clague (1921).
3. A. H. Andresen (1925).
4. Melvin J. Maas (1927).
5. William I. Nolan (1929).
6. Harold Knutson (1917).
7. PAUL J. KVALE (1923).
8. W. A. Pittenger (1929).
9. Conrad G. Selvig (1926).
10. G. G. Goodwin (1925).

MISSISSIPPI

1. John E. Rankin (1921).
2. Wall Dorey (1929).
3. W. M. Whittington (1925).
4. Jeff Busby (1923).
5. Ross A. Collins (1921).
6. Robert S. Hall (1929).
7. Percy E. Quin (1913).
8. James W. Collier (1909).

MISSOURI

1. M. A. Romjue (1923).
2. Ralph F. Lozier (1923).
3. Jacob L. Milligan (1923).
4. David Hopkins (1929).
5. Joseph B. Shannon (1931).
6. Clement C. Dickinson (1931).
7. Robert D. Johnson (1931).
8. William L. Nelson (1925).
9. Clarence Cannon (1923).
10. H. F. Niedringhaus (1927).
11. John J. Cochran (1927).
12. Leonidas C. Dyer (1917).
13. Clyde Williams (1931).
14. James F. Fulbright (1931).
15. Joe J. Manlove (1923).
16. William E. Barton (1931).

MONTANA

1. John M. Evans (1923).
2. Scott Leavitt (1923).

NEBRASKA

1. John H. Moorehead (1923).
2. Malcolm Baldrige (1931).
3. Edgar Howard (1923).
4. John N. Norton (1931).
5. Ashton C. Shallenberger (1931).
6. R. G. Simmons (1923).

NEVADA

- At large—S. S. Arentz (1925).

NEW HAMPSHIRE

1. Vacancy.
2. Edward H. Wason (1915).

NEW JERSEY

1. C. A. Wolverton (1926).
2. Isaac Bacharach (1915).
3. William H. Sutphin (1931).
4. Charles A. Eaton (1925).
5. Percy H. Stewart (1931).

6. Randolph Perkins (1921).
7. George N. Seger (1923).
8. F. A. Hartley, Jr. (1929).
9. Peter A. Cavichia (1931).
10. F. R. Lehlbach (1915).
11. O. L. Auf der Heide (1925).
12. Mary T. Norton (1925).

NEW MEXICO

- At large—Dennis Chavez (1931).

NEW YORK

1. Robert L. Bacon (1923).
2. W. F. Brunner (1929).
3. George W. Lindsay (1923).
4. Thomas H. Cullen (1919).
5. L. M. Black, Jr. (1923).
6. Andrew L. Somers (1925).
7. John J. Delaney (1931).
8. Patrick J. Carley (1927).
9. Stephen A. Rudd (1931).
10. Emanuel Celler (1923).
11. Anning S. Prall (1923).
12. Samuel Dickstein (1923).
13. C. D. Sullivan (1917).
14. W. I. Sirovich (1927).
15. John J. Boylan (1923).
16. J. J. O'Connor (1923).
17. Ruth Pratt (1929).
18. M. J. Kennedy (1930).
19. Sol Bloom (1923).
20. F. H. LaGuardia (1923).
21. J. A. Gavagan (1929).
22. Anthony J. Griffin (1917).
23. Frank Oliver (1923).
24. J. M. Fitzpatrick (1926).
25. Charles D. Millard (1931).

26. Hamilton Fish, Jr. (1920).
27. Harcourt J. Pratt (1925).
28. Parker Corning (1923).
29. James S. Parker (1913).
30. Frank Crowther (1919).
31. Bertrand H. Snell (1915).
32. Francis D. Culkin (1928).
33. F. M. Davenport (1925).
34. John D. Clarke (1921).
35. C. E. Hancock (1927).
36. John Taber (1923).
37. Gale H. Stalker (1923).
38. James L. Whitley (1929).
39. Archie D. Sanders (1917).
40. Walter G. Andrews (1931).
41. Edmund F. Cooke (1929).
42. James M. Mead (1919).
43. Daniel A. Reed (1919).

NORTH CAROLINA

1. Lindsay C. Warren (1925).
2. John H. Kerr (1923).
3. C. L. Abernethy (1922).
4. Edward W. Pou (1901).
5. F. W. Hancock, Jr. (1930).
6. J. Bayard Clark (1929).
7. John W. Lambeth, Jr. (1931).
8. R. L. Doughton (1911).
9. A. L. Bulwinkle (1931).
10. Zebulon Weaver (1931).

NORTH DAKOTA

1. O. B. Burtness (1921).
2. Thomas Hall (1924).
3. J. H. Sinclair (1919).

OHIO

1. John B. Hollister (1931).
2. William E. Hess (1929).
3. Byron B. Harlan (1931).
4. John L. Cable (1929).
5. Frank C. Kniffin (1931).
6. James J. Polk (1931).
7. Charles Brand (1923).
8. G. E. Mouser, Jr. (1929).
9. Wilbur McK. White (1931).
10. T. A. Jenkins (1925).
11. M. G. Underwood (1923).
12. Arthur P. Lamneck (1931).
13. William L. Fiesinger (1931).
14. Francis Seiberling (1929).
15. C. Ellis Moore (1919).
16. C. B. McClintock (1929).
17. Charles West (1931).
18. Frank Murphy (1919).
19. John G. Cooper (1915).
20. Martin L. Sweeney (1931).
21. Robert Cresser (1923).
22. Chester C. Bolton (1929).

OKLAHOMA

1. Wesley E. Disney (1931).
2. W. W. Hastings (1923).
3. Wilburn Cartwright (1927).
4. T. D. McKeown (1923).
5. Fletcher B. Swank (1931).
6. Jed Johnson (1926).
7. J. V. McClintic (1915).
8. M. C. Garber (1923).

OREGON

1. Willis C. Hawley (1907).
2. Robert R. Butler (1928).
3. Charles H. Martin (1931).

PENNSYLVANIA

1. James M. Beck (1927).
2. Edward L. Stokes (1931).
3. Harry C. Ransley (1920).
4. B. M. Golder (1925).
5. J. J. Connolly (1921).
6. George A. Welsh (1923).
7. George P. Darrow (1915).
8. James Wolfenden (1928).
9. Henry W. Watson (1915).
10. J. R. Kinzer (1930).
11. Patrick J. Boland (1931).
12. C. M. Turpin (1929).
13. George F. Brumm (1929).
14. Norton L. Lichtenwalner (1931).
15. L. T. McFadden (1915).
16. Robert F. Rich (1930).
17. F. W. Magrady (1925).
18. Edward M. Beers (1923).
19. Isaac H. Doutrich (1926).
20. J. Russell Leech (1927).
21. J. Banks Kurtz (1923).
22. Harry L. Haines (1931).
23. J. Mitchell Chase (1927).
24. Samuel A. Kendall (1919).
25. Henry W. Temple (1916).
26. J. Howard Swick (1927).
27. Nathan L. Strong (1917).

III. THE NATIONAL GOVERNMENT

28. T. C. Cochran (1926).
29. Milton W. Shreve (1919).
30. William R. Coyle (1929).
31. Adam M. Wvant (1921).
32. Edmund F. Erk (1930).
33. Clvde Kelly (1917).
34. Patrick J. Sullivan (1929).
35. Harry A. Estep (1927).
36. Guy E. Campbell (1917).

RHODE ISLAND

1. Clark Burdick (1919).
2. Richard S. Aldrich (1923).
3. Francis B. Condon (1930).

SOUTH CAROLINA

1. T. S. McMillan (1925).
2. Butler B. Hare (1925).
3. Fred H. Dominick (1917).
4. John J. McSwain (1921).
5. W. F. Stevenson (1917).
6. Allard H. Gasque (1923).
7. H. P. Fulmer (1921).

SOUTH DAKOTA

1. C. A. Christopherson (1919).
2. Royal C. Johnson (1915).
3. William Williamson (1921).

TENNESSEE

1. Oscar B. Lovette (1931).
2. J. Will Taylor (1919).
3. S. D. McReynolds (1923).
4. John R. Mitchell (1931).
5. Ewin L. Davis (1919).
6. Joseph W. Byrns (1909).
7. Edward E. Eslick (1925).
8. Gordon Browning (1923).
9. Jere Cooper (1929).
10. Edward H. Crump (1931).

TEXAS

1. Wright Patnam (1929).
2. Martin Dies (1931).

3. Morgan G. Sanders (1921).
4. Sam Rayburn (1913).
5. H. W. Sumners (1913).
6. Luther A. Johnson (1923).
7. Clay Stone Briggs (1919).
8. Daniel E. Garrett (1921).
9. J. J. Mansfield (1917).
10. J. P. Buchanan (1913).
11. O. H. Cross (1929).
12. Fritz G. Lanham (1919).
13. Guinn Williams (1923).
14. Richard M. Kleberg (1931).
15. John N. Garner (1903).
16. Robert E. Thomason (1931).
17. T. L. Blanton (1916).
18. Marvin Jones (1917).

UTAH

1. Don B. Colton (1921).
2. F. C. Loofbourou (1930).

VERMONT

1. John E. Week (1931).
2. Ernest W. Gibson (1923).

VIRGINIA

1. Schuyler O. Bland (1918).
2. Menalcus Lankford (1929).
3. A. J. Montague (1913).
4. Patrick H. Drewry (1920).
5. Thomas G. Burch (1931).
6. C. A. Woodrum (1923).
7. John W. Fishburne (1931).
8. Howard W. Smith (1931).
9. John W. Flanningan, Jr. (1931).
10. Henry St. G. Tucker (1923).

WASHINGTON

1. Ralph A. Horr (1931).
2. Lindley H. Hadley (1915).

3. Albert Johnson (1913).
4. John W. Summers (1919).
5. Samuel B. Hill (1923).

WEST VIRGINIA

1. Carl G. Bachmann (1925).
2. Frank L. Bowman (1925).
3. Lynn S. Horner (1931).
4. Robert L. Hogg (1930).
5. Hugh Ike Shott (1929).
6. Joe L. Smith (1929).

WISCONSIN

1. Thomas R. Amlie (1931).
2. Charles A. Kading (1927).
3. John M. Nelson (1921).
4. John C. Schafer (1923).
5. W. H. Stafford (1929).
6. Michael K. Reilly (1913).
7. Gardner R. Withrow (1931).
8. Gerald J. Boileau (1931).
9. G. J. Schneider (1923).
10. James A. Frear (1913).
11. Hubert H. Peavy (1923).

WYOMING

At large—Vincent Carter (1929).

ALASKA

James Wickersham (1931).

HAWAII

V. S. K. Houston (1927).

PHILIPPINE ISLANDS

1. Pedro Guevara (1923).
2. Camilo Osias (1929).

PORTO RICO

Felix Cordova Davila (1917).

PERSONNEL OF THE ADMINISTRATION

BY MILTON CONOVER

PROFESSOR, YALE UNIVERSITY

BUREAU DIRECTORS

In 1931 there were comparatively few changes in personnel affecting the departmental and bureau chiefs in the National Administration. Research into the biographies of the directors of representative bureaus, however, revealed assets heretofore not fully recognized by the public. These appear particularly striking when compared with a similar analysis of the personnel of the 72d Congress given elsewhere in this volume.

For this study thirty representative bureaus were selected*. The investi-

*The Bureau chieftains investigated were the directors of the Bureau of Customs, Bureau of the Mint, Bureau of Industrial Alcohol, Bureau of Narcotics, Bureau of the Public Health Service, Coast Guard, Bureau of the Budget; Bureau of Indian Affairs, Office of Education, Geological Survey, National Park Service; The Extension Service, Weather Bureau, Bureau of Animal Industry, Bureau of Dairy Industry, Forest Service, Bureau of Chemistry and Soils, Bureau of Entomology, Bureau of Biological Survey, Bureau of Agricultural Economics, Bureau of Home Economics, Food and Drug Administration; Radio Division, Bureau of the

PERSONNEL OF THE ADMINISTRATION

ization is confined to the strictly Civil Service Bureaus. Consequently those of the State, War, Navy, Justice, and Post Office are eliminated.

PUBLIC SERVANTS OF RURAL BIRTH

It would seem that the rural areas have contributed more public servants to the National Government during the past decades than have the city governments according to this limited study. For instance, only ten of the chieftains were born in large cities. The remaining twenty were born in rural areas, fourteen of them pointing to small towns as their birthplaces, while five were born on farms, and one indicates his birthplace as a county. Only one was born in Washington, D. C., and only one was born in a foreign country. Hence these statistics are in harmony with other studies that show the contribution of the country communities to National political life.

COLLEGE EDUCATION FOR MOST BUREAU HEADS

The colleges helped to educate twenty-six of these thirty Bureau chiefs. Several of them went to more than one college. Consequently, thirty-six different institutions are represented. Yale and George Washington universities tie for first place with three Bureau chiefs each to their credit. Harvard, Pennsylvania, and Chicago have two each. The other colleges contributed only one. Two foreign institutions are represented,—Heidelberg University and the Alford Veterinary College, France. Seventeen of these leaders achieved baccalaureate degrees. Eleven acquired the advanced degree. Twelve obtained professional degrees. Five were granted the honorary D.Sc., while one achieved the degree of Master of Military Science of the Norwich Military College of Vermont. This is a higher average of

Census, Bureau of Lighthouses, Coast and Geologic Survey, Bureau of Mines, Children's Bureau, Bureau of Naturalization, Women's Bureau. About a dozen other bureaus would have been included had the chieftains cooperated in the study.

college trained men than is shown of the Congress.

MERIT vs. SPOILS SYSTEM

That the National Administration has become freer from political spoils systems is indicated by the fact that twenty-four of the directors have worked up from other National Government positions, while the remaining six were obviously appointed for sheer personal qualities, namely, O. E. Reed of the Bureau of Dairy Industry, who had been Professor of Dairy Husbandry at Kansas and Michigan State Colleges and at Purdue University; C. W. Marvin of the Weather Bureau had been a member of the National Advisory Committee for Aeronautics and also a member of the International Ice Patrol; H. G. Knight of the Bureau of Chemistry and Soils had been Dean of Agriculture at Wyoming, Okla., and West Virginia universities; W. J. Cooper of the Office of Education had been State Superintendent of Public Instruction of North Carolina; while Messrs. C. J. Rhoads of Indian Affairs and J. Clawson Roop of the Budget Bureau, had already achieved enviable distinction in private life, Mr. Rhoads being a banker and Mr. Roop, an engineer.

Three of the personnel had had experience in the national defense services, two in the Army and one in the Navy—something of a contrast as compared with popularly elected Congressmen. Although the majority of these leaders had had previous experience in governmental work, nearly every one had already qualified in civil life for some professional or technical occupation, four having been university teachers and three, general teachers and two, lawyers,—another contrast to the personnel of Congress. Other occupations represented are mining engineer, railroad operator, factory operator, banking and medical professions.

OCCUPATION OF THE FATHERS

The occupations of the fathers of the Bureau chiefs are quite various: Six were business men; four were lawyers; three, clergymen; and seven,

III. THE NATIONAL GOVERNMENT

farmers. Only one was a government servant. One was a college president and one was a founder of Blue Mont College which later became Kansas State Agricultural College.

FRATERNAL AFFILIATIONS

In contrast to popularly elected Congressmen, comparatively few of these administrators were members of lodges. Seven of them definitely stated that they belonged to no such organization, while nine failed to mention membership in any lodge. Those claiming fraternal affiliations represented the Masonic fraternity primarily, there being ten Masons identified. The other lodges mentioned were Oddfellows, Elks, Moose and the Columbia Lodge, each claiming one member, while the Sons of the American Revolution is likewise represented by one lone member. The college Greek letter fraternities are conspicuous, eight different fraternities being represented.

MEMBERS OF LEARNED SOCIETIES

Several of the leaders belonged to learned societies. Dr. John R. Mohler, Animal Industry, confined his membership to scientific organizations. Hugh Smith Cumming, Public Health, is a member of the Royal Society of Medicine, England, the National Academy of Peru, and of the Military Surgeons of Mexico. C. L. Marlatt, Entomology, had served as president of the Entomological Society of Washington. He is also a fellow of the American Association for Advancement of Science and a member of several other scientific societies. Dr. Scott Turner, Mines, has been vice-president of the American Institute of Mining and Metallurgical Engineers and is a member of many similar societies. Paul G. Redington, Biological Survey, served in 1931 as president of the Society of American Forestry.

RELIGIOUS AFFILIATIONS

Religion seems to have been something of a private matter for thirty per cent of our Bureau leaders who reported, five stating definitely that

they had no religious affiliation, while six declined to name any. One stated that she was "formerly member of the Lutheran Church." Of those who did claim membership, the Episcopalians have by far the largest number,—seven. The Methodists come second with three, then the Congregationalists and Presbyterians with two each. The Unitarians, Disciples, Quakers, and Baptists are represented by one member.

LITERARY ACTIVITIES

In the matter of authorship nine of the administrators have achieved distinction in their respective specialties. The women directors of the Bureaus have been particularly expressive, Dr. Louise Stanley, Home Economics, having published three dozen articles, and Miss Mary Anderson, Women's Bureau, thirty-one articles. R. S. Patton, Coast and Geodetic Survey, has published four standard books on his subject and six magazine articles. Capt. Francis X. A. Eble, Customs, is the co-author with Dr. L. F. Schmeckebier of the monograph on *The Internal Revenue Service*, published for the Institute for Government Research, Washington. Captain Eble is author of several other articles on the Customs Service. Dr. Scott Turner, Mines, has published thirty articles and Capt. R. Y. Stuart, Forest Service, is the author of two dozen essays. Nils A. Olsen, Agricultural Economics, has published eighteen essays. W. G. Campbell, Chemistry, has written for the *Annals of the American Academy of Political and Social Science*, while Raymond J. Crist, Naturalization, has contributed to the *Encyclopedia Britannica* and *THE AMERICAN YEAR BOOK*. Besides these nine authors, fifteen other of the chieftains have made literary contributions to their respective fields.

PERSONAL ACHIEVEMENTS

Scott Turner.—Personal achievements other than those mentioned above have been realized. Dr. Scott Turner in 1930 was granted the Honorary Degree of Doctor of Engineering at the University of Michigan,

FEDERAL ADMINISTRATIVE ORGANIZATION

where he was cited as "Distinguished for his achievements in the development of engineering projects of enduring import in many, even remote parts of the world, from South America to Spitzbergen." He spent seventeen years in connection with many mining operations in foreign countries.

Harry J. Anslinger, Commissioner of Narcotics, was the United States Delegate at the London Conference on Suppression of Liquor Smuggling, 1926, and at the Antwerp Conference against Alcoholism, 1928;

the Ottawa Conference for Suppression of Liquor and Narcotic Smuggling, 1929; and the Geneva Conference for Limitation of Manufacture of Narcotics, 1931.

W. G. Campbell, Food and Drug Administration, recently improved the organization of The Food and Drug Administration and has been well recognized therefor.

C. L. Marlatt, Entomology, has made significant explorations pertaining to the San José scale in China, Japan, etc. He drafted the Plant Quarantine and Control Act of 1912.

FEDERAL ADMINISTRATIVE ORGANIZATION

By WILLIAM M. SCHUYLER

ASSOCIATE EDITOR, THE AMERICAN YEAR BOOK

THE PRESIDENT AND VICE-PRESIDENT

President.—Herbert Hoover, of California (Republican). Sworn into office as President of the United States, March 4, 1929, in succession to Calvin Coolidge.

Vice-President.—Charles Curtis of Kansas (Republican), Inaugurated Vice-President of the United States, March 4, 1929.

Secretaries to the President.—Theodore G. Joslin (Massachusetts); Lawrence Richey (Pennsylvania); Walter Hughes Newton (Minnesota); George Aubrey Hastings (New York).

Presidential Vacancy.—By Act of Congress, in the case of vacancy occurring in the office of President through the death or removal of both the President and Vice-President, the Cabinet officers succeed to the Presidency in the order indicated in the arrangement of the following summary of the executive departments:

DEPARTMENT OF STATE

Secretary of State.—Henry Lewis Stimson.

Undersecretary of State.—William R. Castle, Jr.

Assistant Secretaries of State.—

Wilbur J. Carr, Francis White, James Grafton Rogers, Harvey H. Bundy.

Foreign Service Personnel Board.—Wilbur J. Carr, Assistant Secretary of State, chairman; James Grafton Rogers, Assistant Secretary of State.

Legal Adviser.—Green H. Hackworth.

Economic Adviser.—Herbert Feis.

Chief Clerk and Administrative Assistant.—Percy F. Allen (acting).

Assistant to the Secretary of State.—Harry A. McBride (acting).

Chief of Divisions.—

Far Eastern Affairs.—Stanley K. Hornbeck.

Latin-American Affairs.—Edwin C. Wilson.

Western European Affairs.—Pierre de L. Boal.

Near Eastern Affairs.—Wallace S. Murray.

Mexican Affairs.—Herschel V. Johnson.

Eastern European Affairs.—Robert F. Kelley.

Passport.—Ruth B. Shipley.

Current Information.—Michael J. McDermott.

Foreign Service Administration.—Herbert C. Hengstler.

III. THE NATIONAL GOVERNMENT

International Conferences.—James Clement Dunn.
Treaty.—Charles M. Barnes.
Foreign Service Personnel.—Homer M. Byington.
Chiefs of Bureaus.—
Accounts.—William McNeir.
Communications and Records.—David A. Salmon.
Translating.—Emerson B. Christie.
Chiefs of Offices.—
Consular Commercial.—James J. Murphy.
Historical Adviser.—Hunter Miller.
Coordination and Review.—Margaret M. Hanna.
Visa.—Anderson Dana Hodgdon.
Foreign Service Buildings.—Keith Merrill.
Foreign Service School.—James B. Stewart.
Disbursing Officer.—W. Ford Cramer.

DEPARTMENT OF THE TREASURY

Secretary of the Treasury.—Andrew W. Mellon.

Charged with the management of the national finances. He prepares plans for the improvement of the revenue and support of the public credit; superintends collection of the moneys paid from and into the Treasury; controls construction of public buildings, coinage and printing of money, and the administration of the Coast Guard and the Public Health Service; ex-officio chairman of the Federal Reserve Board and of the Federal Farm Loan Board.

Undersecretary of the Treasury.—Ogden L. Mills.

Assistant Secretary in Charge of Fiscal Offices.—Arthur A. Ballantine.

Assistant Secretary in Charge of Public Buildings, Public Health and Miscellaneous.—Ferry K. Heath.

Assistant Secretary in Charge of Customs, Coast Guard, Industrial Alcohol and Narcotics.—Seymour Lowman.

Assistant to the Secretary.—John Kieley.

Chief Clerk and Superintendent.—F. A. Birgfeld.

Commissioner of the Public Debt.—William S. Broughton.

Commissioner of Accounts and Deposits.—D. W. Bell.

Chief of Divisions.—
Appointments.—James E. Harper.
Bookkeeping and Warrants.—A. M. Smith.

Deposits.—E. D. Batchelder.
Loans and Currency.—Marvin Wesley.

Paper Custody.—M. A. Emerson.
Public Debt Accounts and Audit.—M. R. Loafman.

Secret Service.—W. H. Moran.
Supply.—L. C. Spangler.

Section of Financial and Economic Research.—W. R. Stark.

Disbursing Clerk.—J. L. Summers.
Government Actuary.—A. G. McLeod.

Comptroller of the Currency.—J. W. Pole.

Has supervision of the national banks, their examination and reports; preparation and issue of national bank circulation; redemption and destruction of national bank notes. Ex-officio member of the Federal Reserve Board in which capacity he draws a salary of \$7,000 in addition to the salary of \$5,000 attached to the office proper of Comptroller of the Currency.

Treasurer of the United States.—W. O. Woods.

Charged with the receipts and disbursement of all public moneys deposited in the Treasury and Sub-Treasuries and in national bank depositories.

Director of the Bureau of the Budget.—J. Clawson Roop.

Commissioner of the Bureau of Customs.—F. X. A. Eble.

Commissioner of the Bureau of Internal Revenue.—David Burnet.

Charged with general supervision of the collection of all internal revenue taxes, including the income tax, and the enforcement of internal revenue laws.

Director of the Bureau of the Mint.—Robert J. Grant.

Has general supervision of the mints and assay offices.

FEDERAL ADMINISTRATIVE ORGANIZATION

Commissioner of Industrial Alcohol.—J. M. Doran.

Commissioner of Narcotics.—H. J. Anslinger.

Register of the Treasury.—Edward E. Jones.

Federal Farm Loan Bureau.—Andrew W. Mellon, Secretary of the Treasury, chairman ex-officio; Paul Bestor, Farm Loan Commissioner; John H. Guill, Lewis J. Pettijohn, Albert C. Williams, George R. Cooksey, James B. Madison.

Director of the Bureau of Engraving and Printing.—Alvin W. Hall.

Produces all the securities and similar work of the Government printed from steel plates.

Bureau of the Public Health Service.—Hugh S. Cumming, Surgeon General.

Charged with the framing and enforcement of regulations for the prevention of the introduction and spread of contagious disease; supervision of the quarantine service of the United States, and supervision of the marine hospitals.

Coast Guard.—Rear Admiral Frederick C. Billard, Commandant.

Office of the Supervising Architect.—James A. Wetmore, Acting Supervising Architect.

Custom House.—Charles R. Lewis, Deputy Collector in Charge.

DEPARTMENT OF WAR

Secretary of War.—Patrick J. Hurley.

Assistant Secretary of War.—Frederick H. Payne.

Assistant Secretary of War (Air).—F. Trubee Davison.

Assistant Chief Clerk.—Frank M. Hoadley.

Executive Assistant to the Secretary of War.—Earl McFarland.

Clerk to the Secretary of War.—John W. Schott.

War Department General Staff.—General Douglas MacArthur, Chief of Staff; Major General George Van Horn Moseley, Deputy Chief of Staff.

Office of the Chief Cavalry.—Major General Guy V. Henry, Chief.

Chief of Field Artillery.—Major General Harry G. Bishop.

Chief of Coast Artillery.—Major General John W. Gulick.

Chief of Infantry.—Major General Stephen O. Fuqua.

Chief of Chaplains.—Julian E. Yates.

The Adjutant General.—Major General Charles H. Bridges.

The Inspector General.—Major General John F. Preston.

The Judge Advocate General.—Major General Blanton Winship.

The Quartermaster General.—Major General J. L. DeWitt.

Chief of Finance.—Major General Roderick L. Carmichael.

Surgeon General.—Major General Robert U. Patterson.

Chief of Engineers.—Major General Lytle Brown.

Chief of Ordnance.—Major General Samuel Hof.

Chief Signal Officer.—Major General Irving J. Carr.

Chief of the Air Corps.—Major General J. E. Fechet.

Chief of the Bureau of Insular Affairs.—Brigadier General Francis LeJau Parker.

Philippine Government.—Dwight F. Davis, Governor-General.

Porto Rico Government.—Theodore Roosevelt, Governor.

Chief of the Militia Bureau.—Major General William G. Everson.

Chief of the Chemical Warfare Service.—Major General Harry L. Gilchrist.

The Army War College.—Major General William D. Connor, Commandant.

DEPARTMENT OF JUSTICE

Attorney General.—William DeWitt Mitchell.

Represents the United States in all legal matters.

Solicitor General.—Thomas Day Thacher.

Assistant to the Attorney General.—John Lord O'Brian.

Assistant Attorneys General.—Seth W. Richardson, Charles P. Sisson, G. Aaron Youngquist, Charles B. Rugg, Nugent Dodds, Roy St.

III. THE NATIONAL GOVERNMENT

Lewis, Charles D. Lawrence (Division of Customs).

Director of the Bureau of Investigation.—J. Edgar Hoover.

Executive Assistant to the Attorney General.—Ugo J. A. Carusi.

Administrative Assistant.—Charles E. Stewart.

General Agent and Chief Clerk.—John W. Gardner.

Assistant Chief Clerk and Appointment Clerk.—Charles B. Sornborger.

Chief of the Division of Mails and Files.—Arthur Robb.

Chief of the Division of Supplies and Printing.—Edward N. Bodholdt.

Librarian.—George Kearney.

Director of the Bureau of Prisons.—Sanford Bates.

Attorney in Charge of Pardons.—James A. Finch.

Disbursing Clerk.—Raymond D. Allison.

Director of the Bureau of Prohibition.—Amos W. W. Woodcock.

POST OFFICE DEPARTMENT

Postmaster General.—Walter F. Brown.

Secretary to the Postmaster General.—Kenneth Macpherson.

First Assistant Postmaster General.—Arch Coleman.

Second Assistant Postmaster General.—Warren Irving Glover.

Third Assistant Postmaster General.—Frederic A. Tilton.

Fourth Assistant Postmaster General.—John W. Philp.

Comptroller.—William E. Buffington.

Director of Parcel Post.—Jesse C. Harraman.

Solicitor.—Horace J. Donnelly.

Chief Post Office Inspector.—Thomas M. Milligan.

DEPARTMENT OF THE NAVY

Secretary of the Navy.—Charles Francis Adams.

Assistant Secretary of the Navy.—Ernest Lee Jahneke.

Assistant Secretary of the Navy (Air).—David S. Ingalls.

Chief Clerk.—F. S. Curtis.

Private Secretary to the Secretary.—Alexander J. Doyle.

Chief of Appointment Division.—William D. Bergman.

Disbursing Clerk.—A. H. Hoiland.

Chief of Division of Records.—Charles T. Ogle.

Budget Officer.—Rear Admiral Ridley McLean.

Island Governments.—

Guam.—Captain E. S. Root, Governor.

American Samoa.—Captain Gatewood S. Lincoln, Governor.

Virgin Islands.—Dr. Paul M. Pearson, Governor.

Chief of Naval Operations.—Admiral William V. Pratt.

Chief of the Bureau of Navigation.—Rear Admiral F. B. Upham.

Chief of the Bureau of Yards and Docks.—Rear Admiral A. L. Parsons.

Chief of the Bureau of Ordnance.—Rear Admiral E. B. Larimer.

Chief of the Bureau of Construction and Repair.—Rear Admiral George H. Rock.

Chief of the Bureau of Engineering.—Rear Admiral Samuel M. Robinson.

Chief of the Bureau of Supplies and Accounts.—Rear Admiral Joseph Johnston Cheatham.

Chief of the Bureau of Medicine and Surgery.—Rear Admiral Charles E. Riggs.

Chief of the Bureau of Aeronautics.—Rear Admiral William A. Moffett.

Judge Advocate General.—Rear Admiral O. G. Murfin.

Naval Consulting Board.—Benjamin B. Thayer, Chairman.

Compensation Board.—Rear Admiral W. L. Capps (retired), senior member.

General Board.—Admiral W. V. Pratt, Rear Admirals Mark L. Bristol, C. B. McVay, Jr., J. R. Y. Blakely, J. V. Chase, Lieutenant Colonel L. C. Lucas, Commander Edgar M. Williams, Captains J. W. Greenslade, E. S. Jackson.

President of the Board of Medi-

FEDERAL ADMINISTRATIVE ORGANIZATION

Examiners.—Rear Admiral Charles P. Kindleberger.

President of the Naval Examining Board.—Captain Hilary H. Royall.

President of the Naval Retiring Board.—Rear Admiral Charles P. Kindleberger.

Naval Dispensary.—Captain Edgar L. Woods.

Navy Yard and Station, Washington, D. C.—Rear Admiral H. V. Butler, Commandant.

Naval Medical School.—Captain Charles S. Butler.

Navy Hospital.—Captain Theodore W. Richards.

Attendance on Officers.—Commander John J. O'Malley.

President of the Board for Examination of Medical Officers.—Captain Charles S. Butler.

President of the Board for Examination of Dental Officers.—Captain Charles S. Butler.

Headquarters Marine Corps.—Major General Ben H. Fuller, Commandant; Brigadier General Rufus H. Lane, Adjutant and Inspector; Brigadier General Hugh Matthews, Quartermaster; Brigadier General George Richards, Paymaster.

Marine Barracks.—Colonel Rush R. Wallace, commanding.

DEPARTMENT OF THE INTERIOR

Secretary of the Interior.—Ray Lyman Wilbur.

Charged with pensions, public lands, Indian affairs, geological surveys, reclamation of arid lands, and mines.

First Assistant Secretary.—Joseph M. Dixon.

Assistant Secretary.—John H. Edwards.

Administrative Assistant.—Ebert K. Burlew.

Chief Clerk.—W. Bertrand Acker.

Solicitor.—Edward C. Finney.

Board of Appeals.—John P. McDowell, John H. Thomas, Alvah W. Patterson.

Supervisor of Classification.—John Harvey.

Commissioner of the General Land Office.—Charles C. Moore.

Commissioner of the Bureau of Indian Affairs.—Charles J. Rhoads.

Commissioner of the Office of Education.—William John Cooper.

Director of the Geological Survey.—W. C. Mendenhall (acting).

Commissioner of the Bureau of Reclamation.—Elwood Mead.

Director of the National Park Service.—Horace M. Albright.

Board of Indian Commissioners.—Samuel A. Eliot, Chairman.

Territorial Officials.—

Alaska.—George A. Parks, Governor.
Hawaii.—Lawrence M. Judd, Governor.

The Alaska Railroad.—Otto H. Ohlson, General Manager.

DEPARTMENT OF AGRICULTURE

Secretary of Agriculture.—Arthur Mastick Hyde.

Assistant Secretary.—R. W. Dunlap.

Assistant to the Secretary.—E. N. Meador.

Director of Scientific Work.—A. F. Woods.

Director of Regulatory Work.—Walter G. Campbell.

Director of Extension Work.—C. W. Warburton.

Director of Personnel and Business Administration.—W. W. Stockberger.

Director of Information.—Milton S. Eisenhower.

Solicitor.—Elton L. Marshall.

Librarian.—Claribel R. Barnett.

Office of Experiment Stations.—James T. Jardine.

Weather Bureau.—Charles F. Marvin, Chief.

Bureau of Animal Industry.—John R. Mohler, Chief.

Bureau of Dairy Industry.—O. E. Reed, Chief.

Bureau of Plant Industry.—William A. Taylor, Chief.

Forest Service.—R. Y. Stuart, Forester and Chief.

Bureau of Chemistry and Soils.—Henry G. Knight, Chief.

Bureau of Entomology.—C. L. Marlatt, Chief.

III. THE NATIONAL GOVERNMENT

Bureau of Biological Survey.—Paul G. Redington, Chief.

Bureau of Public Roads.—Thomas H. MacDonald, Chief.

Bureau of Agricultural Economics.—Nils A. Olsen.

Bureau of Home Economics.—Louise Stanley, Chief.

Plant Quarantine and Control Administration.—Lee A. Strong, Chief.

Grain Futures Administration.—J. W. T. Duvel, Chief.

Food and Drug Administration.—W. G. Campbell, in charge.

DEPARTMENT OF COMMERCE

Secretary of Commerce.—Robert Patterson Lamont.

Assistant Secretary.—Julius Klein.

Assistant Secretary for Aeronautics.—Clarence M. Young.

Administrative Assistant to the Secretary.—Malcolm Kerlin.

Solicitor.—Ephraim F. Morgan.

Chief Clerk and Superintendent.—E. W. Libbey.

Disbursing Clerk.—Charles E. Molster.

Chiefs of Divisions.—

Appointments.—Edw. J. Gardner.

Publications.—Thomas F. McKeon.

Purchases and Sales.—Walter S. Erwin.

Librarian.—Anne G. Cross.

Director of Air Regulation.—Gilbert G. Budwig.

Director of the Radio Division.—William D. Terrell.

Director of the Bureau of the Census.—William M. Steuart.

Director of the Bureau of Foreign and Domestic Commerce.—Frederick M. Feiker.

Director of the Bureau of Standards.—George K. Burgess.

Commissioner of the Bureau of Fisheries.—Henry O. Malley.

Commissioner of the Bureau of Lighthouses.—George R. Putnam.

Director of the Coast and Geodetic Survey.—R. S. Patton.

Commissioner of the Bureau of Navigation.—Arthur J. Tyrer.

Steamboat Inspection Service.—Dickerson N. Hoover, supervising inspector general.

Commissioner of the Patent Office.—Thomas E. Robertson.

Director of the Bureau of Mines.—Scott Turner.

DEPARTMENT OF LABOR

Secretary of Labor.—William N. Doak.

Charged with the duty of fostering, promoting and developing the welfare of the wage earners of the United States and also working towards a solution of the labor problems.

The Assistant Secretary.—Robert Carl White.

Second Assistant Secretary.—W. W. Husband.

Assistants to the Secretary.—Peter F. Snyder and W. N. Smelser.

Solicitor.—Theodore G. Risley.

Chief Clerk.—Samuel J. Gompers.

Disbursing Clerk.—John R. Demorest.

Director of Conciliation.—Hugh L. Kerwin.

Commissioner of Labor Statistics.—Ethelbert Stewart.

Commissioner General of Immigration.—Harry E. Hull.

Chief of the Children's Bureau.—Grace Abbott.

Commissioner of Naturalization.—Raymond F. Crist.

Director of the Women's Bureau.—Mary Anderson.

United States Employment Service.—John R. Alpine, Supervising Director.

United States Housing Corporation.—Theodore J. Risley, President.

MISCELLANEOUS EXECUTIVE SERVICES

Civil Service Commission.—Thomas E. Campbell, president.

George R. Wales, Jessie Dell.

Interstate Commerce Commission.—Ezra Brainerd, Jr., chairman.

Balthasar H. Meyer, Clyde B. Aitchison, Joseph B. Eastman, Ernest J. Lewis, Frank McManamy, Claude H. Porter, Patrick J. Farrell, William E. Lee, Hugh M. Tate, Charles I. Mahaffie.

United States Bureau of Efficiency.—Herbert D. Brown, Chief.

FEDERAL ADMINISTRATIVE ORGANIZATION

United States Employees' Compensation Commission.—Bessie Parker Brueggeman, chairman, Harry Bassett, John M. Morin.

General Accounting Office.—J. R. McCarl, Comptroller General of the United States.

United States Railroad Administration.—Andrew Mellon, Secretary of the Treasury, Director General.

Federal Reserve Board.—Andrew W. Mellon, Chairman; J. W. Pole, Comptroller of the Treasury; Eugene Meyer, Governor; Adolph C. Miller, Charles S. Hamlin, Wayland W. Magee, George R. James.

Federal Trade Commission.—C. W. Hunt, Chairman; Garland S. Ferguson, Jr., William E. Humphrey, Charles H. March, Edgar A. McCulloch, Otis B. Johnson, Secretary.

United States Tariff Commission.—Robert L. O'Brien, Chairman; Thomas Walker Page, Vice-Chairman; John Lee Coulter, Edgar B. Brossard, Lincoln Dixon, Commissioners; Sidney Morgan, Secretary.

United States Board of Tax Appeals.—Logan Morris, Chairman.

Federal Farm Board.—James C. Stone, Chairman.

Federal Power Commission.—George O. Smith, Chairman, Frank R. McNinch, Ralph B. Williamson, Marcel Garsaud, Claude L. Draper.

Federal Oil Conservation Board.—The Secretary of the Interior, Chairman; the Secretary of War, the Secretary of the Navy, the Secretary of Commerce.

Federal Radio Commission.—Charles McK. Saltzman, Chairman.

Veterans' Administration.—Brigadier General Frank T. Hines, Administrator; George E. Ijams, Director of the United States Veterans' Bureau; Edward W. Morgan, Acting Commissioner and Deputy Commissioner of the Bureau of Pensions; Colonel C. W. Wadsworth, Director of the Bureau of National Homes.

Federal Board for Vocational Education.—J. C. Wright, Director.

United States Board of Mediation.—Samuel E. Winslow, Chairman.

United States Shipping Board.—T. V. O'Connor, Chairman.

National Advisory Committee for Aeronautics.—Joseph S. Ames, Chairman.

Alien Property Custodian.—Howard Southerland.

Board of Surveys and Maps of the Federal Government.—Lieutenant Colonel R. R. Ralston, Chairman.

The Commission of Fine Arts.—Charles Moore, Chairman.

National Memorial Commission.—Ferdinand D. Lee, Chairman.

Smithsonian Institution.—

Established 1846 under the terms of the will of James Smithson for the "increase and diffusion of knowledge among men." The former aim is accomplished by the promoting of original, scientific research, and the latter by publications and lectures. The affairs of the Institution are managed by a Board of Regents which coöperates with the Government and with National scientific bodies. Under the direction of the Institution are the National Museum, charged with preserving and utilizing objects of art and ethnological, geological and mineralogical collections belonging to the United States; Bureau of American Ethnology, National Gallery of Art, Freer Gallery of Art, National Zoölogical Park, Astrophysical Observatory, and the Regional Bureau for the United States International Catalogue of Scientific Literatures.

Secretary.—C. G. Abbott.

National Academy of Sciences.

—W. W. Campbell, President; David White, Home Secretary; R. A. Millikan, Foreign Secretary. George K. Burgess, Chairman of the National Research Council.

Pan-American Union.—L. S. Rowe, Director General.

United States Geographic Board.—Frank Bond, Chairman.

American National Red Cross.—John Barton Payne, Chairman.

National Commission on Law Observance and Enforcement.—George W. Wickersham, Chairman.

III. THE NATIONAL GOVERNMENT

FEDERAL CIVIL SERVICE

BY CLINTON ROGERS WOODRUFF

HONORARY SECRETARY, NATIONAL MUNICIPAL LEAGUE

EXPANSION IN THE SERVICE

Growth Since the War.—The inclusion of the District of Columbia service in the Federal classified civil service by recent executive order of President Hoover was the most important forward step since the Wilson administration. At the beginning of President Wilson's term of office there were 369,879 employes in the entire Federal service, 282,597 of which were competitive. Due to war conditions, the service was greatly increased. In addition to natural growth, the competitive service was increased by executive order by approximately 33,000 positions, including Income Tax employes, certain employes in the Internal Revenue Service, laborers at Naval Hospitals, part of the aviation section of the Signal Corps, oilers, firemen and stokers in the Engineer Department at large, and over 10,000 first class postmasters. President Wilson also issued in 1913 an executive order requiring that competitive examinations be held for the incumbents of all fourth class postmasterships whose incumbents had not obtained office through competitive examination, 21,000 officers were involved. There were 587,622 employes in the Federal service, of whom 445,957 were in the competitive class, when President Hoover took office March 4, 1929.

Classification.—The 121,708 positions not in the competitive class may be divided into three groups—16,700 positions filled through nomination by the President and confirmation by the Senate (principally postmasterships); 10,500 positions specifically excepted from the civil service law by acts of Congress; and 109,000 positions excepted from the civil service rules by executive orders. The 10,500 positions in the second group were principally deputy collectors of internal revenue, deputy United States marshals, and scattered positions in other branches of the service. The great

majority of the 109,000 positions excepted under Schedule A were exempted by Presidential action because small salaries, remote locations, or part-time employment have been assumed to make their exception necessary or advisable; they include 35,000 clerks at fourth class post offices, who receive no pay directly from the government; 59,000 other low-paid clerks and messengers in post offices; between 15,000 and 20,000 laborers; and between 10,000 and 15,000 physicians employed on a part-time or fee basis. There are, however, about 5,345 positions which the President may easily transfer to the competitive service by executive order because competitive examination as a means of filling them is practicable. Of this number 438 are in the Treasury Department, 1,255 in the Department of Justice, 237 in the Navy Department, 324 in the Department of the Interior, 497 in the Department of Agriculture, 1,817 in the Panama Canal Administration, 259 in the Administration of Veterans' Affairs, and the remainder are scattered among other departments.

District of Columbia.—On November 18, 1930, the District of Columbia, which is a municipality under the jurisdiction of the Federal Government, was included in the classified civil service under the jurisdiction of the U. S. Civil Service Commission. Previously the Federal civil service rules applied only to the District police and fire forces (by act of Congress). The Extension made by President Hoover adds about 6,500 positions with a total annual payroll of over \$10,000,000. Including the police and fire forces, the District of Columbia service numbers about 9,500 positions.

PROHIBITION AND CIVIL SERVICE

Wickersham Commission Approval.—In at least one conclusion

FEDERAL CIVIL SERVICE

The Wickersham Commission agreed. That was in praise of the civil service examination system of selection of employes and the part it plays in prohibition enforcement. The general report states that "since the extension of the civil service laws over it (the Prohibition Bureau) there has been continued improvement in organization and effort for enforcement, which is reflected in an attitude of greater confidence in the prohibition agents on the part of United States attorneys and judges." Judge Kenyon in speaking of the sluggishness of prohibition enforcement said: "The turnovers in the prohibition personnel prior to civil service show a shocking condition. The situation is somewhat better now, and better men are being secured." Judge McCormick looks to the civil service for the one ray of hope in an otherwise hopeless situation. "If improvements," he says, "that appear to have been brought about by the civil service requirements and by the Prohibition Reorganization Act of 1930, did not hold out some degree of hope for the law, I would favor abandonment of the experiment now."

Treasury Report.—The annual report of the Secretary of the Treasury for 1930 commends the present prohibition force and strongly favors the competitive system of selection. The report says (page 92): "The process of placing the entire personnel of the Bureau of Prohibition in the classified civil service, as provided by law, was completed during the year. It has brought about a marked improvement in the personnel of the prohibition service."

MODIFICATION OF VETERAN PREFERENCE RULE

Executive Order.—An executive order amending the civil service rules with relation to the preference accorded war veterans in the Federal civil service was issued by President Hoover on April 24. This order supersedes certain provisions of President Coolidge's executive order of March 2, 1929, and is based on the recommendations of the Advisory Committee on Veteran Preference as

set forth in a recent report to the President. This Committee, which consisted of Thomas E. Campbell, President of the United States Civil Service Commission, Chairman; Gen. Frank T. Hines, Veterans' Administrator; Roy C. Johnson, Chairman of the House of Representatives Committee on Veterans' Legislation; Seth W. Richardson, Assistant Attorney General, and John Thomas Taylor, of the American Legion, within recent months asked the National Civil Service Reform League and a number of veterans' organizations for briefs stating their views on the Coolidge order, and held a number of hearings at which these views were presented orally.

Restriction on Additional Preference.—The recommendations of the League and the veterans' organizations seemed to coincide on one principal point,—that the additional preference allowed the disabled veteran over the non-disabled veteran by the Coolidge order should be restricted to those veterans whose disabilities were of service origin and exist at the time of applying for civil service examination. This change in regulations was therefore, recommended by the Advisory Committee, was agreed to by President Hoover, and was embodied in his executive order of April 24.

Application.—The new order also allows officers and enlisted men retired for age or length of service, who establish through official sources the present existence of service-connected disability, to take advantage of the preference. It authorizes the Civil Service Commission to hold quarterly examinations for positions for which eligible lists already exist, open only to persons entitled to the disability preference. The Advisory Committee explains that this provision will enable veterans to obtain places on the eligible registers "who, because the Commission holds examinations not more frequently than once in one, two or three years, are afforded no special opportunity after the regular examination date to establish their qualifications for consideration for Federal employment."

III. THE NATIONAL GOVERNMENT

Appointment Factors.—The Committee calls attention to the complaint made by certain service organizations that disabled veterans have frequently been passed over by appointing officers; and although it believes from its investigations that such complaints are without justification, makes the following recommendation, which has been included in the executive order: "That whenever an appointing officer passes over a veteran eligible and selects a non-veteran eligible with the same or lower rating, the reasons for such action shall be filed with the Civil Service Commission to become a part of the veteran's record, but that no copy of these reasons shall be furnished to the veteran concerned or to anyone else except in the discretion of the appointing officer."

Rating.—The Advisory Committee made an interesting survey to arrive at the facts in connection with one of the principal objections of the National Civil Service Reform League to the Coolidge order; i.e., that the order did not require that the veteran secure the normal passing mark of 70 per cent before receiving the five or ten point preference. The Committee found that during the fiscal year 1930, 1,996 veterans were appointed, whereas in the six years preceding the number of veterans appointed averaged 1,227. Of the 1,996 veterans appointed in 1930, 447 attained earned ratings of less than 70 per cent and thus owed their appointments to the 10 point bonus. The appointing officers of these 447 were asked for their comment on the efficiency and work performance of the veterans, and replies covering 352 were received. The appointing officer reported that in 51 cases the disability constituted a handicap; in 288 cases it did not. The work of 177 of these veterans compared favorably with that of employes who had earned 85 per cent or higher in the entrance examination; the work of 146 did not compare favorably; and no comparison was made for the other 29. The work of 242 compared favorably with that of employes who had earned

marks between 70 and 85 per cent; the work of 90 did not compare favorably; in 20 cases no comparison was made.

Qualifying Results.—The survey showed that the preference has resulted in the appointment of a larger proportion of veterans, disabled and non-disabled, over non-veterans than in previous years. During the last fiscal year the disabled veterans furnished 3 per cent of the competitors, 3.6 per cent of the eligibles, and received 5.3 per cent of the appointments. The non-disabled veterans furnished 17.6 per cent of the competitors, 18.9 per cent of the eligibles, and received 18.8 per cent of the appointments. Non-veterans furnished 79.4 per cent of the competitors, 77.5 per cent of the eligibles, and received 75.9 per cent of the appointments.

Salary Scale.—The Committee found that 8,100 of the veterans entering the Federal service last year were appointed to positions with a maximum salary of \$1,800 a year. Many received less than the maximum on entrance. There were 883 veterans appointed as unskilled laborers. Only 73 received salaries of from \$3,200 to \$4,000 a year; 25, salaries of from \$4,000 to \$5,200, while one was appointed principal agronomist at \$5,600, and one assistant technical director at \$8,000.

Conclusions.—The Committee concluded that "This showing as established from the official records of the Civil Service Commission . . . does not seem to support any claim that veteran preference as at present administered seriously affects the efficiency of the government service." A quite different conclusion was reached by the League's special committee on veteran preference after its survey last year.

COUNCIL OF PERSONNEL ADMINISTRATION

On April 27 President Hoover created by executive order the Council of Personnel Administration with the avowed object of "developing in the Federal government a more effective

FEDERAL CIVIL SERVICE

and economical system of employment and personnel management, and to promote the general welfare of the employes of the national government." The Council is expected to establish a liaison system between the Civil Service Commission and the government departments which it serves, prepare plans for improvement and coordination of personnel administration in the departments, cooperate with outside agencies interested in personnel management and thus make available to the government the best developments in private personnel administration; to encourage training courses for government service in universities; to enable a greater number of positions to be filled by promotion rather than by new appointments; and to facilitate the transfer of employes from one department to another. The Council will consist of the President of the Civil Service Commission, who will serve as Chairman; the Director of the Bureau of the Budget, the Chief of the Bureau of Efficiency, the Chairman of the Interstate Commerce Commission, the Administrator of Veterans' Affairs, and the heads of government departments, Dr. L. J. O'Rourke, Director of Research in Personnel Administration of the Civil Service Commission, will serve as Director. An Advisory Committee of persons outside the government service, representing industry, independent personnel organizations and educational institutions, will be formed.

FEDERAL PERSONNEL SURVEY

In February the Personnel Classification Board submitted to Congress its final report on its survey of positions in the field service of the Federal Government. The principal recommendations of the Board include a completely revised classification act for departmental and field services, a revised system of efficiency ratings with semi-automatic increases in salary, and individual treatment for certain groups of positions, such as laborers, mechanics and seamen. The adoption of the recommendation of

the Board as outlined in the report will go far toward placing the service on a more scientific basis and putting an end to the chaotic salary conditions which exist in the field service.

PAY OF FEDERAL EMPLOYEES

President's Message.—In his message to Congress transmitting the Annual Budget, President Hoover said: "Under the classification act of 1923, as amended, and the application of that act to the field services by adjusting their rates of pay to correspond with those defined for the departmental service in the District of Columbia, there had developed through the years rather a wide difference among the several departments and establishments as to the relationship which the average of the existing salaries bears to the average of the compensation rates provided by law for the various grades of positions. In some instances the payrolls show that the average has been approximately attained; in others that the grades are at least one step below the average, and in many cases two or more steps below the average. With a view to commencing the adjustment of this situation the estimates contained in this budget carry for promotion purposes for each activity approximately 30 per cent of the amount required to bring all under-average grades up to the average. This will materially lessen the difference which now obtains between the many payrolls and if the same principle is followed for the next two or three years will eliminate such difference. It is estimated that it will require approximately \$14,400,000 to bring all under-average grades up to the average and the estimates contained in this budget provide for approximately 30 per cent of this amount.

While the percentage has been arbitrarily chosen and might be modified without affecting the purpose of eliminating discrepancies between and within the department and establishments, I believe any deviation from the general principle stated or any

III. THE NATIONAL GOVERNMENT

application of it to one department and not to another will defeat the purpose of providing 'equal compensation for equal work,' which was the expressed intent of Congress in enacting the classification act of 1923."

THE FOREIGN SERVICE

An executive order was signed by the President on June 10 which carried out the provisions of the foreign service reorganization law passed in February, 1931, and is said by the Department of State to mark "one of the most important developments in the progress and improvement of the foreign service which has ever been taken." It provides for a scientific classification, with provision for appointment on merit, of the clerical staffs of all diplomatic and consular offices (about 2,000 persons); establishes a Board of Foreign Service Personnel, to assure impartial administration and promotions based upon the ascertained value of officers to the service; permits retirement of foreign service officers at their own request after 30 years' service; liberalizes retirement annuities for officers already retired; establishes a maximum and minimum salary range of each class of foreign service officers and a system of moderate annual increases in salary within these limits.

POST OFFICE DEPARTMENT

Several recent public addresses of the Postmaster General and the First Assistant Postmaster General have called attention to the fact that presidential postmasters are not civil service employes and "have the same rights as any other citizen to participate in civic and political affairs". These plain intimations that partisan political activity on the part of postmasters of these classes will be not only condoned, but expected, have occasioned considerable public comment to the effect that the "spoils system" is still a factor to reckon with. At the same time, the validity of the Civil Service Commission's rule against political activity has been attacked from various quarters, so far ineffectively.

FEDERAL CLASSIFICATIONS

Administrative Plan.—A broad administrative plan is established by the Classification Act of 1923 for centralized control of the process of fixing pay for positions in the departmental service of the Federal Government. This measure having laid the ground work for the classification of these positions, was followed in 1928 by the passage of the Welch act providing for salary increases by the Classification Board and in 1930 by the Brookhart Act which corrected its inequalities and defects and strengthened the organization and functioning of the Personnel Classification Board. A volume outlining the history of the movement and the organization and functioning of the Board and explaining this plan, has been published under the title *The Personnel Classification Board: Its History, Activities and Organization*. It was written by Paul V. Betters, and published by The Brookings Institution.

Personnel Program.—A *Personnel Program for the Federal Civil Service*, is the title of another monograph by Herman Feldman. It is a report submitted by the economic adviser to the U. S. Personnel Classification Board and published by the Committee on the Civil Service of the House of Representatives, February 16, 1931. It considers the elements of a Government wage policy and a general personnel program. In this connection it reviews the history of civil service reform and Federal personnel management. It deals with such material as the selection of employes, their training and development; principles of adequate remuneration; the improvement of supervision and various means by which loyalty, efficient work and harmonious relations may be promoted in the vast Government organization. Because of its constructive treatment of a large number of aspects of a modern personnel program, it is likely to prove of interest not only to Government bodies and large institutions, but to business concerns generally.

CIVIL SERVICE REFORM AND CHANGE

Detroit.—There has been a reform in the Civil Service Commission's work in Detroit, which is a matter of evolution rather than revolution. For years efforts at improvement were made without particular results. A few years ago, as the outcome of a visit of Fred Telford, certain desirable changes in the charter were drafted. From then on the Commission went steadily ahead selecting high grade men as examiners and in revamping their examination procedure. Recently Mayor Murphy made several of the suggested charter changes effective by executive order without waiting for charter revision. In consequence the Commission is doing competent work and is honest in its administration. From a position of hostility the Detroit Bureau of Governmental Research has become cooperative. Recently there has been experimenting with different types of examinations in the Police Department, trying out different ones at one time. The Mayor has given a very creditable administration. While much of the Welfare work has been slipshod and wasteful there are extenuating circumstances for that. On the other hand, according to local authorities the operating expenses of the government have been materially reduced, political appointments have been largely on a merit basis, and there is no evidence of other than the highest integrity in the carrying on of public service.

Philadelphia.—J. L. Jacobs & Co. of Chicago completed a salary standardization study in Philadelphia. This is the first attempt in ten years to remedy a situation which long needed some definite action, although the City Council has shown no inclination to provide money for its publication and distribution. If the Jacobs recommendations are put into effect, it is estimated that there would be an annual saving of at least \$250,000, mainly by starting of new employees at minimum rates. The recommendations, if adopted, would correct existing inequalities in paying for similar work and establish the principle of

equal pay for equal work, which would have a very salutary effect on the morale of the city employees.

In the South.—In Alabama a civil service bill was defeated at the 1931 election. In Georgia the State Auditor has been requested by the legislature to make a study of personnel systems in other states, and to report thereon with a view of enacting a civil service law for the state. In Texas the Tarrant County civil service law, which took effect in 1930, has been repealed by the legislature, having been declared unconstitutional by the District Court in Fort Worth on the ground of special legislation.

Chicago.—Governor Emerson vetoed a bill purporting to strengthen the State Civil Service system in Illinois. The proposals for improving the Chicago City system suffered from "silent strangulation." The members of the committee in charge of the bill refused to attend the meetings. The bill to place the Chicago sanitary district under the merit system was defeated by a vote of 15 to 6. Thirty senators were absent or "not voting." The Senate Civil Service Committee buried the bill which would have made virtually all the employes of Cook County subject to competitive examination, after it had passed the House.

Maine.—An act embodying an administrative code for the state of Maine was introduced in the Maine Senate in January, which entirely reorganized the administrative departments and provided for a scientific personnel system under the control of a personnel officer attached to the executive department. As passed by the legislature, however, the entire personnel section was reelected. Another bill was enacted which provides for appointment of a civil service commission to have jurisdiction over employes of the State Fish and Game Department.

Oregon.—The constitutionality of the Multnomah County (Oregon) civil service law, which had been attacked on several grounds, was upheld in the Oregon supreme court.

III. THE NATIONAL GOVERNMENT

PERSONNEL OF THE JUDICIARY

By WILLIAM M. SCHUYLER

ASSOCIATE EDITOR, THE AMERICAN YEAR BOOK

SUPREME COURT OF THE UNITED STATES

Charles Evans Hughes (New York), Chief Justice of the United States, appointed 1930.

Oliver Wendell Holmes (Massachusetts), appointed 1902.

Willis Van Devanter (Wyoming), appointed 1910.

James Clark McReynolds (Tennessee), appointed 1914.

Louis Dembitz Brandeis (Massachusetts), appointed 1916.

George Sutherland (Utah), appointed 1922.

Pierce Butler (Minnesota), appointed 1922.

Harlan F. Stone (New York), appointed 1925.

Owen J. Roberts (Pennsylvania), appointed 1930.

Officers of the Supreme Court

Clerk.—Charles Elmore Cropley.

Deputy Clerks.—Reginald C. Dilli, Hugh W. Barr.

Marshal.—Frank Key Green.

Reporter.—Ernest Knaebel.

CIRCUIT COURT OF APPEALS OF THE UNITED STATES

First Circuit.—Mr. Justice Holmes; George Hutchins Bingham (New Hampshire), Scott Wilson (Maine).

Second Circuit.—Mr. Justice Stone; Martin T. Manton (New York), Learned Hand (New York), Thomas W. Swan (Connecticut), Augustus N. Hand (New York), Harrie Brigham Chase (Vermont), Julian W. Mack (New York).

Third Circuit.—Mr. Justice Roberts; Joseph Buffington (Pennsylvania), J. Warren Davis (New Jersey), Victor B. Woolley (Delaware), J. Whitaker Thompson (Pennsylvania).

Fourth Circuit.—Mr. Chief Justice Hughes; John J. Parker (North Carolina), Elliott Northcot (West

Virginia), Morris A. Soper (Maryland).

Fifth Circuit.—Mr. Justice Brandeis; Nathan P. Bryan (Florida), Rufus E. Foster (Louisiana), Samuel H. Sibley (Georgia), Joseph C. Hutcheson, Jr. (Texas).

Sixth Circuit.—Mr. Justice McNolds; Arthur C. Denison (Michigan), Charles H. Moorman (Kentucky), Xenophon Hicks (Tennessee), Smith Hickenlooper (Ohio), Julian W. Mack (New York).

Seventh Circuit.—Mr. Justice Van Devanter; Samuel Alschuler (Illinois), Evan A. Evans (Wisconsin), William M. Sparks (Indiana).

Eighth Circuit.—Mr. Justice Butler; Kimbrough Stone (Missouri), William S. Kenyon (Iowa), Arba S. Van Valkenburgh (Missouri), Wilbur F. Booth (Minnesota), Archibald K. Gardner (South Dakota).

Ninth Circuit.—Mr. Justice Sutherland; Curtis D. Wilbur (California), William H. Sawtelle, (Arizona).

Tenth Circuit.—Mr. Justice Van Devanter; Robert E. Lewis (Colorado), John H. Cotteral (Oklahoma), Orie L. Phillips (New Mexico), George T. McDermitt (Kansas).

UNITED STATES COURT OF CUSTOMS AND PATENT APPEALS

William J. Graham (Illinois), presiding judge, appointed 1924.

Oscar E. Bland (Indiana), appointed 1923.

Charles Sherrod Hatfield (Ohio), appointed 1923.

Finis James Garrett (Tennessee), appointed 1929.

Irvine L. Lenroot (Wisconsin), appointed 1929.

COURT OF APPEALS OF THE DISTRICT OF COLUMBIA

George E. Martin, Chief Justice
Charles H. Robb.

FEDERAL JUDICIAL PROSECUTIONS

Josiah A. Van Orsdel.
William Hitz.
D. Lawrence Groner.

COURT OF CLAIMS OF THE UNITED STATES

Fenton Whitlock Booth (Illinois),
Chief Justice, appointed 1928.

William Raymond Green (Iowa),
appointed 1928.

Benjamin H. Littleton (Tennessee),
appointed 1929.

Thomas S. Williams (Illinois), ap-
pointed 1929.

Richard Smith Whaley (South
Carolina), appointed 1930.

SUPREME COURT OF THE DISTRICT OF COLUMBIA

Alfred A. Wheat, Chief Justice.

James M. Proctor.

F. Dickinson Letts.

Daniel W. O'Donoghue.

Jennings Bailey.

Peyton Gordon.

Oscar R. Luhring.

Joseph W. Cox.

Jesse C. Adkins.

UNITED STATES CUSTOMS COURT

Israel F. Fischer, presiding judge.

Walter H. Evans.

Charles P. McClelland.

Jerry B. Sullivan.

George Stewart Brown.
George Morley Young.
William J. Tilson.
Genevieve R. Cline.
David H. Kincheloe.

UNITED STATES MARSHAL'S OFFICE

United States Marshal.—Edgar C.
Snyder.

Chief Deputy Marshal.—Stephen B.
Callahan.

UNITED STATES ATTORNEY'S OFFICE

United States Attorney, District
of Columbia.—Leo. A. Rover.

Assistants.—John W. Fihelly, David
A. Hart, Rebekah S. Greathouse,
Harold W. Orcutt, William H. Col-
lins, M. Pearl McCall, John B.
Williams, Walter M. Shea, Charles
B. Murray, William A. Gallagher,
Irvin Goldstein, James R. Kirk-
land, John R. Fitzpatrick, Julian
I. Richards, Frank W. Adams,
Michael F. Keogh, Wilbert Mc-
Inerney, Wilbur N. Baughman,
John J. Sirica, Arthur J. Lambert,
Alexander H. Bell, Jr., John J. Wil-
son, John W. Wood, Milford F.
Schwartz, Frederick Hitz, Roger
Robb.

FEDERAL JUDICIAL PROSECUTIONS

By HOWARD BRITTON MORRIS

DEPARTMENT OF HISTORY, COLLEGE OF THE CITY OF NEW YORK

CLEARANCE OF THE DOCKET

The close of the fiscal year 1931 saw a decrease of approximately 3,000 cases pending of all classifications; it saw a decrease of 61 cases commenced during the same period; and an increase of 10,000 cases terminated, so that comparatively the dockets of the Department of Justice were materially improved.

PROHIBITION

In a case where Federal officers had definite evidence of equipment secretly to withdraw beer from a dis-

tillery operating under a permit for the manufacture of cereal beverages and upon entry of the premises with the consent of the owner they had the right of search without a warrant and upon the discovery that the terms of the permit were being violated by the secret withdrawal of beer for the purposes of sale or the avoidance of revenue laws had the right to seize this equipment for forfeiture under the internal revenue laws. (United States v. Excelsior Brewery Inc., et. al., C. C. A. 2.) Without violation of the 5th

III. THE NATIONAL GOVERNMENT

Amendment, it is possible under section 26 of the National Prohibition Act to cause the forfeiture of an automobile seized at the time of the arrest of the owner of the car for the transportation of intoxicating liquor in said car, as said action under said section 26 does not require an action *in rem* against the automobile when the owner was convicted in a criminal proceeding, on the same charge. (United States *v.* Spallo, D. C., W. D. Mo., No. 10498.)

Although the possession of denatured alcohol without a permit was held a crime as a violation of the regulation of the Treasury Department under the powers given it by the National Prohibition Act, the transportation thereof without a permit was not a crime or violation of the provision that "the sale, possession, or use of specially denatured alcohol except by a duly authorized permittee," which provision further adds "any specially denatured alcohol found in the possession of any person not holding a permit under these regulations, or in the possession of a carrier not authorized to transport intoxicating liquor under the National Prohibition Act, will be deemed subject to forfeiture." (United States *v.* Chiarenza, *et al.*, D. C., D. Mass., No. 9374. Jan. 15, 1931.)

A Prohibition Agent may assume the word "beer" to mean "real beer" and not "near-beer," and on this basis make an arrest and seizure without a search warrant. (United States *v.* Miller, D. C., S. D. N. Y., No. C-73-104, Feb. 6, 1931.)

Action for the forfeiture of a truck for the transportation of smuggled liquor may be taken under either the customs laws or the Prohibition Act, without regard to the action taken in the criminal case. (United States *v.* One Fargo Truck, D. C., S. D. Texas, No. 413.)

Information given by the driver of a truck to Immigration Service inspectors that the truck carried liquor was sufficient grounds for a search by a customs officer without a warrant. (Same case.)

The statute on the forfeiture of

vehicles engaged in the transportation of goods subject to Federal tax with the intention to defraud the Government of said tax may also be applied to vehicles transporting materials for the manufacture of such goods, notwithstanding the claim of a bona fide lienor. (United States *v.* One Ford Truck, D. C., S. D. Texas, No. 1416.)

During the first year of its existence the Bureau of Prohibition made a total of 66,189 cases with a ratio of 86 per cent convictions to terminations. 8,499 automobiles and 21,541 stills were seized. The case of United States *v.* La Franca (282 U. S. 568) decided that a civil action to recover taxes is punitive in character if the defendant has previously been convicted for the same charge, and therefore such an action is barred.

CONSTITUTIONAL LAW

Illinois Referendum.—The Constitution of the United States and its amendments may be considered as equally enforceable as the provisions of the Constitution of the State of Illinois, and an Illinois statute dealing with the eligibility of women for jury duty is not void because submitted to the electorate of the State for approval. If this referendum were invalid on the ground that it delegated legislative power to the people, yet the law itself without such provision would be valid. (United States *v.* Zito, *et al.*, D. C., S. D. Ill., No. 1718, Mar. 31, 1931.)

Pardoning Power.—The pardoning power of the President of the United States is not usurped by a District Court which in the same term as sentence was imposed in a criminal case reduced the sentence, as this is a judicial act. (United States *v.* Benz, Supreme Court of the United States.)

The Eighteenth Amendment to the Federal Constitution is valid, since the manner of its ratification (by legislatures of three-fourths of the states) was proposed by Congress, and is in keeping with the Fifth Article of the Constitution, nor does it conflict with the provisions of

FEDERAL JUDICIAL PROSECUTIONS

the Tenth Amendment. (*United States v. Sprague, et al.*, Supreme Court of the United States.)

CUSTOMS

Appeals.—The United States Court of Customs and Patent Appeals shows the following record according to the report of the Attorney General:

Appeals pending at beginning of year.....	62
Appeals filed during year.....	101
Total.....	163
Appeals disposed of during year:	
After argument.....	92
By stipulation.....	9
Total.....	101
Appeals pending at end of year.....	62

Pending Cases.—Some of the more important cases which were pending when the report went to press were against the United States, but merit citation: *Faber, Coe & Gregg, Inc. v. United States*, *Norwegian Nitrogen Products Co., v. United States*, *Wm. A. Foster & Co., Inc., v. United States*, and *Fox River Butter Co., v. United States*.

Decisions.—Among the decisions were: Although British vessels within the territorial waters of the United States are subject to treaty protection, and indictment charging the transportation of intoxicating liquor need not allege that such transportation was not protected by said treaty in so far as it created an exception to the National Prohibition Act, which is a matter of defense. (*United States v. Randell, et al.*, D. C., E. D. N. Y., No. 28220.) In a proceeding for the forfeiture of a vessel under section 453 of the Tariff Act of 1922 for having unladen a cargo of a value in excess of \$500 on a Sunday night in an American port without the special license required from the collector by the Tariff Act of 1922 (section 450) seizure during the commission of said act is not a condition under the statutes aforementioned requisite for forfeiture, and the findings in the case indicate

that the burden of the proof of showing the domestic origin of the goods rests on the claimants under section 615 of the Act. In such a case a vessel was liable to forfeiture under section 4377 of the revised statutes which provides for the forfeiture of a vessel engaged in a trade other than that for which licensed but there is no cause for action for forfeiture under the Eighteenth Amendment and the National Prohibition Act. (*United States v. Blackwood, C. C. A. 1., No. 2529.*) The ultimate scientific use to which an article is dedicated may be taken as the basis upon which customs duties may be levied, notwithstanding that other materials must be added upon importation to achieve that purpose. (*United States v. Schaeffer and Budenburg Corp., C. C. P. A., No. C-3345.*) The ordinary brace and bit of the carpenter is dutiable as "in chief value of . . . metal" and not as "machine tools . . . operating other than by hand power," in spite of the claim that the leverage obtained by the variable length of the crank handle is of a nature other than hand power. (*United States v. Wm. Goldenblum and Co., C. C. P. A., No. C-3336.*) A judgment for the amount due, rendered in a legal action, is necessary to chancery a bond given to the United States as an indemnity bond conditioned on the payment of the amount of estimated duties on a cargo. (*United States v. New Amsterdam Casualty Co., C. C. A. 1.*)

COURTS, ETC.

Court of Claims.—Although the decision of the Court of Claims may omit the finding of an ultimate fact, if this ultimate fact may be deduced from the circumstantial facts mentioned a reversal of the judgment of the Court of Claims is not necessary as the Supreme Court of the United States must treat the finding of the fact of the Court of Claims identically with the verdict of a jury. (*United States v. Wells*, Supreme Court of the United States, Apr. 20, 1931.)

III. THE NATIONAL GOVERNMENT

Modified Judgment in Criminal Cases.—Provided that the punishment be not increased the court which imposes sentence in a criminal case has the right to modify its judgment as does the court in a civil case, subject to the limitation that the second action be taken within the same term of court as the first. (*United States v. Benz*, Supreme Court of the United States.)

Indictment.—In the absence of a bill of particulars, an indictment need not be void because of its failure to specify the time, place and circumstances of the alleged crime, nor its failure to allege that the alleged crime was "then and there prohibited and unlawful." (*United States v. Denison*, D. C., Ct. Appeals, No. 5291.)

Evidence.—Inasmuch as evidence obtained by trickery is admissible in a case of a liquor prosecution even to the extent of the violation of the state law, such evidence may be used as a basis of probable cause in an application for a search warrant. (*United States v. Wainer*, D. C., W. D. Pa., No. Cr. 6863.)

Bail.—When certain monies have been deposited by a third person in place of bail for the appearance of an alleged violator of the National Prohibition Act, a fine assessed against the defendant may be satisfied from this deposit. (*United States v. Werner*, D. C., N. D. Oklahoma, No. 4463.)

Probation.—The Federal Probation Act was intended to apply only to offenses of a minor character, committed by persons of juvenile age or whose mentality was such as to preclude a clear understanding of the wrong committed, and was not for the benefit of persons of mature years whose offenses were of a substantial nature. (*United States v. Oliver*, D. C., N. D. Ill.)

PUBLIC LANDS

Land Patent.—As a trustee *ex maleficio* the Government was not debarred from recourse to law by the Statute of Limitations in the case of the issuance of a land patent under

Section 1166 of the United States Code where certain persons were alleged to have induced the State of Utah to select the land for which said patent was issued by the Secretary of the Interior and the Commissioner of the Land Office under the Act of July 16, 1894, by the misrepresentation, known to the defendant, that the land was non-mineral in character. (*United States v. Amalgamated Sugar Co., et al.*, C. C. A. 10, No. 39.)

Payment Recovery.—The acceptance by a minor clerk of the General Land Office of a check from a coal mining company and the placement thereof on a special deposit does not bar the Government from suit for the recovery of a larger sum, although the check so accepted was marked "Payment in Full," as such acceptance was not made with the official authority of the Commissioner of the General Land Office or any deputy thereof in accordance with negotiations relative thereto. (*United States v. Huerjano Coal Company*, D. C., D. Colo., No. 9188.)

INTERSTATE COMMERCE

Steamship Schedules.—A steamship company is not required to file its schedules with the Interstate Commerce Commission for transportation of goods from Baltimore to Florida by water, even where it pays the freight charges on the goods from an interior point of origin to Baltimore, and then places these charges on the bill of the ultimate consignee, as this is only incidental to the performance of its contract with the shipper, and there were no through bills of lading or joint rates covering the entire act of transportation from point of origin to points in Florida. (*United States v. Munson Steamship Line*, Supreme Court of the United States. This case was referred to last year in the article "Federal Judicial Prosecutions, 1930," having at that time been in the Circuit Court of Appeals, 4.)

Railroad Valuation.—An order of the Interstate Commerce Commission to a new railroad company to

FEDERAL JUDICIAL PROSECUTIONS

employ the amount paid out to it by the company formerly in control as a basis for the valuation of the common stock of the new company is not of such a nature as to allow a review by a District Court. (*United States v. Atlantic, Birmingham and Coast Railroad*, Supreme Court of the United States, No. 88.)

Subpoena Enforcement.—Section Nine of the Federal Trade Commission Act gives the Commission the power to issue subpoenas in any "proceeding or investigation," and as the extent of the Commission's power may be ascertained by an application by the Commission to a District Court for the enforcement of its subpoenas, the Supreme Court of the District of Columbia cannot, by the exercise of the equity jurisdiction residing therein, restrain the Commission from the enforcement of its subpoenas. (*Federal Trade Commission v. Millers National Federation, et al.*, District of Columbia, Court of Appeals.)

WAR RISK INSURANCE

Disability Claim.—An applicant under the provisions of a converted war risk insurance policy whose claim is allowed is entitled to compensation for a period not exceeding six months prior to the establishment of due proof of permanent total disability which dating is to be reckoned from the date of the establishment of said due proof and not from the date of the verdict of the court. The fact that the plaintiff, though physically able to work, was unable because of a chronic skin disease, "Psoriasis" to secure employment due to his appearance and the fact that others shunned contact with him, believing his disease infectious, is a justifiable ground for claiming total and permanent disability. (*United States v. Ranes*, C. C. A. 9, No. 6332, Mar. 30, 1931.)

Veteran's Beneficiaries.—The wife and child of a war veteran are entitled to benefit from his insurance before his father and sisters under the regulations of the Veteran's Bureau, regardless of the fact that after a

lapse in the payment of the premiums the veteran reinstated his insurance at which time he indicated his desire to name his wife and child as beneficiaries, but died before action thereon was taken by the Veterans' Bureau. (*United States v. Johnson, et al.*, D. C., W. D. Ky.)

TRUST ACTIONS

Meat Packing Industry.—The case of Swift and Company, *et al.*, was decided in favor of the Government on Jan. 5, 1931, but because of a slight modification of the consent decree issued in 1920, the case has been appealed to the Supreme Court of the United States. The effort has been for the Swift and Armour Companies to obtain relief from the "Packer's Consent Decree," which prohibits them from holding stockyard capital stock, doing business in commodities not related to the meat-packing industry, or operating retail markets for the sale of meat. To date the only success has been the modification of Jan. 5, 1931, by which the defendants were permitted to deal with unrelated lines at wholesale only.

Oil Merger.—The Supreme Court of the United States reversed the ruling of the District Court in the Standard Oil Case, and permitted the merger of the Standard Oil Company of Indiana with the Vacuum Oil Company on the ground that there was sufficient competition in the domestic market to prevent the merger from becoming a monopoly, while on the other hand such a merger would permit the defendant companies to affect economies which would enable them to compete more readily with the foreign oil companies in the world market.

Policy Trend.—A number of important cases are still pending, but the trend during the year has been towards a more liberal construction of the anti-trust laws, while the Department of Justice has maintained the policy stated a year ago of refraining from entry upon a "trust-busting" campaign.

III. THE NATIONAL GOVERNMENT

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

(For further information, the reader may address the following organizations)

AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE, 3622 Locust Street, Philadelphia, Pa.	LEAGUE FOR POLITICAL EDUCATION, 113 West 43rd St., New York City.
AMERICAN BAR ASSN., 209 S. LaSalle Street, Chicago, Ill.	LEAGUE FOR PUBLIC DISCUSSION, 500 Fifth Ave., New York City.
AMERICAN CONSTITUTIONAL LEAGUE, 27 William Street, New York City.	NATIONAL ASSN. FOR CONSTITUTIONAL GOVERNMENT, 716 Colorado Building, Washington.
AMERICAN DEFENSE SOCIETY, INC., 154 Nassau Street, New York City.	NATIONAL ASSN. OF LEGAL AID ORGANIZATIONS, 3660 University Ave., Los Angeles, Calif.
AMERICAN POLITICAL SCIENCE ASSN., Angell Hall, University of Michigan, Ann Arbor, Mich.	NATIONAL CIVIL SERVICE REFORM LEAGUE, 519 Fifth Ave., New York City.
BETTER GOVERNMENT LEAGUE, Washington, D. C.	NATIONAL INSTITUTE OF PUBLIC ADMINISTRATION, 261 Broadway, New York City.
COMMERCIAL LAW LEAGUE OF AMERICA, 137 S. LaSalle St., Chicago, Ill.	VOTERS' EDUCATIONAL LEAGUE, 524 First Avenue, New York City.
HONEST BALLOT ASSN., INC., 120 Broadway, New York City.	

DIVISION IV

STATE GOVERNMENT

NATIONAL AND INTERSTATE RELATIONS OF STATES

BY JOHN M. MATHEWS

PROFESSOR, UNIVERSITY OF ILLINOIS

CONGRESSIONAL RE-APPORTIONMENT

Redistricting Problems.—Under the Congressional reapportionment based on the census of 1930, some states became entitled to additional representatives in the lower house of Congress and, on the other hand, the representation of other states was reduced. On this account the problem of redistricting the state was faced in 1931 by the legislatures of a number of states. Such redistricting usually involves a contest for party advantage in the legislature, with the possibility of a deadlock between the two houses of the legislature or between the legislature and the governor. In some states this difficulty has been overcome by providing for electing any additional representatives at large or, in the case of states whose representation has been reduced, by providing for electing the entire group of representatives at large. Other states whose representation has been changed, however, have succeeded in getting redistricting acts through the legislature, accompanied by the usual amount of gerrymandering.

Illinois.—A peculiar situation existed in Illinois which, although there was no change in the number of its representatives in the lower house of Congress under the census of 1930, had been electing two representatives at large on account of the failure of the legislature to redistrict the state after the Congressional reapportionment act of 1911. In 1931

the legislature passed a new redistricting act providing districts for these two representatives, but the act was held invalid by a lower state court on account of the great inequality in the populations of the respective districts.

California.—The greatest gain in Congressional seats was made by California, whose representation in the lower house was increased from eleven to twenty. Governor Rolph, in his message to the legislature of that state, warned against the temptation to gerrymander in the redistricting act.

THE STATES AND FEDERAL CONSTITUTIONAL AMENDMENTS

Prohibition.—On account of adverse popular referenda on prohibition in certain states, such as Massachusetts and Rhode Island, the governors of those states recommend that Congress should be requested to take steps looking toward the modification or repeal of the Eighteenth Amendment and the Volstead Act. Governor Roosevelt of New York, seemingly with the Eighteenth Amendment in mind, recommends the adoption of a state constitutional amendment providing for referenda on the ratification by the state of amendments to the Federal Constitution. He apparently overlooks the fact that such a provision in the Ohio Constitution was declared invalid in 1920 by the Supreme Court of the United States.

IV. STATE GOVERNMENT

Child Labor.—The child labor amendment to the Federal Constitution which was proposed by Congress and ratified by about half a dozen states seems to have little chance of adoption. Nevertheless the governors of Oregon and New Mexico, in their messages to their respective legislatures, recommend its ratification.

THE STATES AND FEDERAL AID

Features of Grants-in-Aid.—The system of Federal grants-in-aid to the states has continued without fundamental change. The essential features of this system are: first, the acceptance by the state of the Federal offer of aid and the designation of a cooperating state agency; second, the submission by the state of a plan of activity and its approval by the Federal Government; and, third, the matching by the state of the Federal appropriation dollar for dollar.

Maternal and Child Hygiene.—One form of Federal aid to the states was that for the promotion of maternal and child hygiene. On account of opposition to the intervention of the Federal Government in this field, Congressional appropriations for this purpose were allowed to lapse in 1929. In the Congressional session ended March, 1931, however, the friends of the movement succeeded in having bills passed in both houses for the resumption of this subvention. The bills, however, were not in identical form, and Congress adjourned without reaching an agreement with reference to the matter.

Employment Bureaus.—Another bill for Federal aid at this session was that introduced by Senator Wagner of New York authorizing the Federal Government to cooperate with the states in establishing public employment bureaus, and carrying a substantial appropriation for the purpose. This bill passed both houses but was vetoed by President Hoover.

Opposition to Federal Aid Wanes.—Federal aid has been opposed in the past by jealous defenders of states' rights on the ground that it encroaches on "state sovereignty". This opposition has been repeatedly

voiced in the messages of governors to legislatures, but in 1931 such protests were noticeable by their absence. There is a growing tendency on the part of the states not only to welcome but to seek Federal aid.

Law Enforcement.—This is true not only in the field of financial aid but also in the field of law enforcement. In an address broadcast over the nation under the auspices of the American Bar Association in September, Attorney General Mitchell deprecated the "willing abdication" of state powers to the Federal Government and the current tendency of state and local governments to shirk their manifest obligations and transfer them to the Government. He went on to point out that the solution of the crime problem under our constitutional system is one for cities, counties, and states. The Federal Government can generally deal with criminal gangs only indirectly through such methods as deportation proceedings and infliction of penalties for failure to pay Federal income taxes on their illicit gains. Direct action in most cases is the proper function of the states.

ANNUAL CONFERENCE OF GOVERNORS

Government Costs.—The twenty-third annual conference of state governors was held at French Lick Springs, Ind., in June. One of the principal subjects discussed was the growing cost of state and local government. Governor Brucker of Michigan pointed to the rising taxes of local units of government as one of the chief causes of the financial distress. In order to remedy this condition, he advocated increased control and supervision by the state over local expenditures and local affairs.

Pinchot Denounces Power Trust.—Both Governor Roosevelt of New York and Governor Pinchot of Pennsylvania, regarded as potential candidates of their respective parties for president, made addresses at the Conference. Governor Pinchot's address consisted of a vigorous denunciation of the electric power trust and

STATE CONSTITUTIONS, INITIATIVES AND REFERENDA

of the domination in public affairs of the public utilities, whom he accused of graft and overcharges for their services.

Unemployment.—In addition to the regular or general Conference of Governors, other special or sectional conferences are held from time to time to consider particular matters. For example, a conference of the governors of the Eastern industrial states, —New York, Ohio, New Jersey, Connecticut, Rhode Island, and Massachusetts—was held in Albany, N. Y., late in January to consider the unemployment problem. They discussed unemployment insurance, the setting up of a central clearing-house of information on unemployment, and uniformity of labor laws and of corporation tax laws.

INTERSTATE RELATIONS

Water Division.—The year was signalized by several noteworthy decisions of the Supreme Court of the United States regarding interstate waters. For example, in the case between New York and New Jersey with respect to the diversion of the waters of the Delaware River, that tribunal issued an order providing for an equitable distribution of such

waters. Again, in a suit by Connecticut against Massachusetts to enjoin a diversion of the waters of the Connecticut River, the Supreme Court in February declined to issue the injunction on the ground that the threat of injury was not sufficiently great or immediate.

Arizona and Boulder Dam.—The principal interstate controversy decided by the Supreme Court during the year, however, was the suit brought by Arizona against California and five other states and also against the Secretary of the Interior to enjoin the carrying out the Boulder Dam project on the Colorado River, which had been authorized by Act of Congress. In its decision handed down in May, the Supreme Court, speaking by Justice Brandeis, declined to grant the injunction, holding that the authority to construct the dam and reservoir is a valid exercise of Congressional power and that the Boulder Canyon Project Act does not abridge the right of Arizona to make additional appropriations of water flowing within the state or on its boundaries. Under this ruling, work on the Boulder Dam project proceeds in spite of Arizona's objections.

STATE CONSTITUTIONS, INITIATIVES AND REFERENDA

By **FREDERIC H. GUILD**

PROFESSOR, UNIVERSITY OF KANSAS

MEASURES SUBMITTED TO POPULAR VOTE

In only eight states were questions submitted to popular vote in 1931. There were 21 in all, 8 being adopted and 13 rejected. Of these, 15 were constitutional amendments, 5 adopted; 4 were referenda, 3 adopted; and 2 were initiated acts, both defeated. Two of the defeated constitutional amendments were also initiated.

CONSTITUTIONAL AMENDMENTS ADOPTED

Alabama authorized a state inheritance tax not to exceed the amounts

now or hereafter deducted from the United States Inheritance and Estates Tax.

Maine provided for a reapportionment of the Senate, abandoning the district system and apportioning by counties, one Senator for each county and up to five for counties of over 240,000 population, the term of Senators to be the same as for Representatives.

New York provided that the Federal census instead of the State census should be used for the apportionment of Senators and Representatives. The Legislature was also

IV. STATE GOVERNMENT

authorized to appropriate a possible total of \$19,000,000 for reforestation near the Adirondack and Catskill Parks for an eleven-year period. The names of the State Department of Charities and State Board of Charities were changed to State Department of Social Welfare and State Board of Social Welfare.

CONSTITUTIONAL AMENDMENTS DEFEATED

Alabama.—To authorize \$25,000,-000 state bonds for highways, to be paid by an additional 1c gasoline tax.

Kentucky.—To raise the debt limit to 4% for school districts including cities of first to fifth class.

Michigan.—(1) To authorize the state to improve or aid in improving landing fields; (2) to authorize a bond issue to pay or refund present indebtedness.

New York.—(1) To permit legislators to accept civil appointments during their terms of office; (2) to create an additional judicial district; (3) to empower the legislature to make further exception for the government of Westchester County, this time in relation to the assessment of property.

Ohio.—To authorize \$7,500,000 of state bonds for the construction, repair, equipment, and furnishing of buildings and purchase of lands for the welfare institutions of the state.

Oklahoma.—(1) To prohibit corporations for the purpose of acquiring real estate other than in incorporated cities and towns from holding real estate for longer than 10 years, and any public service corporation from holding any land whatever except as necessary for the transaction of its business; (2) to establish the budget system and budget director

on a constitutional basis instead of statutory as at present.

REFERENDA

Maine.—Of the four measures referred to the people only one was demanded by popular petition, the others being submitted by the legislatures. The important act adopted in Maine materially reorganized part of the state administration. Four departments were created:—Finance, Health and Welfare, Sea and Shore Fisheries, and Education. Twenty-eight boards or single offices were abolished or consolidated, most of of them in the field of social welfare, and state financial control and supervision was strengthened.

Montana.—The other act adopted was in Montana, providing for the issuing of *state highway debentures* from 1931 to 1934 for a maximum of \$6,000,000 to match Federal aid.

Michigan refused to approve an act defining murder in the first degree and providing for the death penalty by electrocution.

Kentucky defeated a proposal for a constitutional convention.

INITIATIVES

Oklahoma was the only state to consider initiatives this year. The special election of Dec. 18 centered entirely on Governor Murray's program, in which he attempted to "ring the firebells" over the state. Eight petitions were circulated and filed and seven had been approved by the secretary of state up to Dec. 4. Litigation threatened to defeat the entire program, but four measures actually were submitted at the special election. Two were constitutional amendments and two acts. All were defeated. The acts proposed an income tax and free text books.

CHANGES IN ELECTORAL LAWS

BY CHARLES KETTLEBOROUGH

DIRECTOR, INDIANA LEGISLATIVE BUREAU

GENERAL

An inspection of the laws enacted

during 1930 and 1931 prescribing and regulating the electoral procedure of

CHANGES IN ELECTORAL LAWS

the states discloses few notable changes in election machinery. Among the more notable general changes are the following: Idaho codified and re-enacted the registration and primary election law and New Jersey codified the entire election law. In Connecticut, every city and town having a population of 10,000 or more is required to use voting machines after Jan. 1, 1932. Virginia authorized the use of voting machines in any city, town or county. Texas made the use of voting machines optional in any county and Georgia in certain designated counties. Rhode Island prohibited any club, society or association from using the words "Republican" or "Democrat" without the approval of the proper party committee of the territorial unit in which it operates, and Rhode Island likewise enacted an elaborate law defining, regulating and prescribing the powers, duties and limitations of party caucuses. New Jersey provided that the state convention of each party shall consist of the governor or the candidate for governor if a governor is to be elected, the holdover state senators, the candidates for each house of the legislature and for Congress, the members of the state committee, and the members of Congress. The convention is held subsequent to the primary. A committee on resolutions of 5 members is appointed. All planks for the state platform are referred to this committee and the committee then prepares a tentative platform and submits a copy thereof, together with a copy of each plank which the committee rejects, to each member of the convention. The convention adjourns for one week and then re-assembles to adopt a platform. North Dakota authorized the use of guide cards or slates at any state-wide primary or general election for the information and guidance of voters. Oregon provided for the non-partisan nomination and election of supreme, circuit and district judges. The names of persons desiring to be candidates are presented by nominat-

ing petitions or by the declarations of the candidates themselves.

REGISTRATION OR ENROLLMENT

Colorado provided that in all towns having a population of 2,000 to 100,000 and which are county seats, the voters register with the county clerk who has authority to purge all registration lists. Colorado also requires every voter to declare his party affiliation before he votes at the primary. Minnesota requires registration in villages having a population of 8,000 or more and a valuation of more than \$10,000,000, and Missouri enacted a registration law applying to cities of the first class, requiring a registration of all voters, in each precinct, for a period of one week during the month of September preceding an election and establishing a permanent registration system in cities of 30,000 to 80,000. In Providence and Newport, Rhode Island, the city council is authorized to elect a board of canvassers and registration of three members. The board is required to visit each ward in the city prior to each general election to secure the registration of voters. A similar board is provided for in Pawtucket. A special system of permanent registration was provided for in Louisville, Kentucky. The registration is in charge of a board appointed by the mayor. In all cities having a population of 165,000 or more in Virginia, serial cards may be used instead of books for the registration of voters. In South Dakota all registration boards were abolished and their duties transferred to certain designated public officials. Detailed, amendatory changes were made in the registration laws of Maryland, Nebraska, Nevada, New Jersey, New York, North Dakota, Oregon, South Dakota, Massachusetts and Wisconsin, designed to require new registrations in certain counties and cities; prescribe the hours of registration; provide for re-registration on change of residence; the time and duration of the registration period; the purging and correction of registration records; the registration

IV. STATE GOVERNMENT

of absentee voters; the information required by the registration certificate and to require registration prior to special elections.

CORRUPT PRACTICES

Maine prescribes the form of the expense report which each candidate is required to make and the information which must be included therein. New Jersey requires that a candidate who expends more than \$500 is required to appoint a campaign manager; two or more candidates may appoint a manager jointly; and any candidate may appoint himself as his own campaign manager. Massachusetts prescribed the character of the expense account fund and the time when it must be filed, and North Carolina enacted an entire corrupt practice act of the usual type.

PRIMARIES

Maine provided that the candidate for any office in the primary who receives the highest number of votes is nominated if the number of votes received by such person is equal to the number required to place his name on the ballot by petition. In cities having a population of 500,000 or more in Missouri, voters may write in the name of a man and of a woman for party committeemen, or any person who is a candidate for party committeeman may have his name printed on the ballot by paying \$100, which is used as an expense fund by the party to which the candidate belongs. Nebraska provided for the nomination of judges of the supreme, district and county courts, the state superintendent, county superintendents and regents of the University by non-partisan ballots. North Carolina placed 7 additional counties under the primary law. Kentucky provides that the ballots cast at the primary shall not be counted until the third day after the election, and commissions to the successful candidates are not issued until ten days after the primary and then only if no recount or contest is pending. In South Carolina an office holder who is a candidate in the pri-

mary is not obliged to resign from his office. In Mississippi the primary law was codified and re-written but presents no unusual provisions. Fifteen other states amended their primary election laws in minor details.

GENERAL ELECTIONS

In Arkansas an *ex-officio* state board of election commissioners was created, consisting of the governor, the secretary of state and the attorney-general. Prior to each general election, the state board appoints a county board of election commissioners in each county, consisting of 3 members, and the county board appoints 3 election judges for each precinct in the county. Colorado provided for the arrangement of the names of all candidates on the general election ballot, in two groups, in alphabetical order. In the first group are the names of the candidates of the two major parties and in the second group the names of the candidates of all minor parties. Michigan provided that all elections shall be governed by eastern standard time. Oregon adopted the double election board plan, one to receive and the other to count the ballots. Texas provided that the names of the candidates for president and vice president instead of the names of the presidential electors, shall be printed on the ballot. Massachusetts enacted a law prohibiting election boards from announcing the result of the election in any voting precinct before the official declaration of the result is made. Kansas prescribed a method for filling vacancies in the electoral college of the state.

REFERENDUM

Minnesota authorized county boards to call special elections on questions affecting counties. The call must be issued within 60 days after the resolution determining the election has been issued. Illinois prescribed the method of voting on public measures, and Nebraska designated the form of initiative and referendum ballots.

LAW REFORM

LAW REFORM

BY CLINTON ROGERS WOODRUFF

HONORARY SECRETARY, NATIONAL MUNICIPAL LEAGUE

AMERICAN LAW INSTITUTE

Annual Meeting.—The ninth annual meeting of the American Law Institute was held at Washington, May 7, 8 and 9, 1931, with a record of substantial accomplishment. Tentative drafts on property, agency, torts, contracts, trusts and administration of the criminal law, and a Proposed Final Draft on Conflict of Laws were considered in full meeting, after having previously run the gauntlet of reporters and advisers and of the Council of the Institute. The now familiar procedure was followed, the reporters explaining their attitude on such sections as seemed to require it and making a note of constructive suggestions brought out by the discussion.

Discussion.—In the case of the tentative draft on criminal law, which covered the subjects of summoning witness in one state to testify in another state, killing or wounding to effect arrest, and "comment on fact that defendant did not testify," definite approval was given to a proposed statute dealing with the first matter and to a proposed rule governing the third. The proposed statute on the subject of killing and wounding to effect arrest, as to which there were marked differences of opinion among reporters, advisers and the Council, was referred back for further consideration.

LAW ENFORCEMENT

"The time for such action," President Wickersham in his address, said, "is peculiarly opportune, referring to the proposed restudy of the substantive law of crimes." The work of the Commission created by President Hoover in 1929 to study and report upon the problem of the enforcement of laws will come to an end with the expiration of the congressional appropriation for its work June 30, 1931. During the two years of its existence,

it has caused studies to be made by many qualified persons into such subjects as police, prosecution, courts, probation, prisons and parole, criminal statistics, criminal justice and the foreign born, causes of crime, cost of crime and juvenile delinquency, lawlessness of Government officials, besides the controversial subject of prohibition—public interest in which largely has overshadowed any attention to these other topics. Reports on the subjects mentioned will shortly be issued. It is believed that they will contain much useful and accurate information and make recommendations of legislative and administrative action which should be helpful in solving the problem of insuring better law observance.

RESTATEMENT OF THE LAWS

Chief Justice Hughes addressed the meeting informally saying that he was more impressed each year with the prodigious character of the restatement of the law, as indicated by the multiplying drafts and revisions which had come to his desk. In the midst of so great a task, there might come a "time of discouraging reflection on the immense needs of the administration of justice and the extreme difficulty of finding a way by which human nature in administration can solve the problem which it creates."

Institute's Annual Report.—William Draper Lewis's annual report as Director of the Institute, gave the members an accurate and detailed statement of the work done during the past year and of plans for the immediate future. The net results of the labors of the year was the presentation to the meeting of one revised and eight tentative drafts covering 1,335 pages. While real progress is not, of course, measured by hours of work or the number of pages produced, still the figures did give some

IV. STATE GOVERNMENT

idea of what had been accomplished. After a brief discussion of the things which he considered necessary to the completion of the Restatement, and an appreciative mention of the favorable report of the Special Committee of the Carnegie Corporation which had been charged with the duty of making an independent inquiry as to the Institute's work, Director Lewis devoted the greater part of his report to the "Work Done and to Be Done on the Restatement."

Contracts.—In Contracts there was submitted for consideration tentative drafts on the chapter on discharge of contracts, on fraud and misrepresentation, on duress and on mistake, as well as a tentative draft of the topic restitution in the chapter on remedies. There remain the chapters on impossibility and illegality and the third and last topic in the chapter on remedies,—specific performance. Two final chapters will be submitted a year from now and in connection therewith a complete revision of the entire subject so that if the Institute approves, the volume on Contracts may be published.

Conflicts of Laws.—The Reporter, Prof. Joseph H. Beale, and his advisers completed the tentative drafts on the conflict of laws more than two years ago. The difficulties pertaining to the subject were such that the Council determined to delay its final publication until the publication of contracts and in the meantime to leave nothing undone to secure accuracy. Prof. Beale and his advisers submitted to the Council a revision of the chapters on property, contracts, obligation of judgments and other imposed duties, and procedure. The group is now working on the revision of the chapter on wrongs, and the executive committee of the Council has still under consideration the chapter on administration.

Agency Liability.—In connection with the subject of agency (Warren A. Seavey, Reporter) a tentative draft of the chapters on liability of the other party to the principal, liability of the other party to the agent and liability of the agent to the other

party, were submitted. With the submission of these chapters there remain two chapters—one on the duties of liabilities of the agent to the principal, and the other, the final chapter, on liability of the principal to the agent. The Reporter and his advisers are nearing the completion of their consideration of the first of these two chapters and have already done some work on the final chapter.

Trusts.—This year there was before the Institute for consideration tentative draft No. 2, on trusts, which includes the chapter on the transfer of the interest of the beneficiary and the chapter on administration of the trust-relation between the trustee and the beneficiary. The Reporter, Mr. Scott, and his advisers have been working for some time on the remaining parts of the chapter and on the next chapter which deals with the administration of the trust,—liability to third persons. There still remain to be considered the chapters relating to the persons bound by the trust, the termination of trusts, charitable trusts, resulting trusts and possibly constructive trusts. The work on this subject will probably continue for the next three years.

Torts.—The first tentative drafts on torts cover those unintended harms which affect the person as distinguished from land or chattels. When the Reporter, Prof. Francis H. Bohlen, and his advisers completed the tentative drafts of the chapters relating to these matters they turned to questions pertaining to unintended harms which includes negligence and related topics. Edward S. Thurston was appointed Reporter for the chapters dealing with the unintended harms to property, the desire being to finish the matter that would be included in the first volume on unintended harms prior to the conclusion of the work on the second volume, which, as planned, deals with unintentional harms of negligence and related topics. This year the Council had submitted for consideration a tentative draft of the first chapter dealing with invasions of interests of exclusive possession of land.

Proximate Cause.—For some time Prof. Bohlen and his advisers have been working on a difficult subject of legal cause commonly spoken of as proximate cause. Besides the matters just mentioned, the volume on unintentional harm, as planned, will also contain chapters on contributory fault including such matters as are usually called voluntary assumption of risk, contributory negligence, imputed negligence. When this is done that part of the Restatement which deals with what is called mere or ordinary negligence where the injury done is harm to the person will be completed.

Life Estates.—A tentative draft of the chapter on property dealing with life estates was submitted, this being the concluding chapter of the division of the subject relating to estates which, in connection with the introductory matter, is, as planned, the first part of the subject property. The Reporter, Mr. Powell, has already begun work on future interests and a group of advisers is being formed to assist him.

CRIMINAL PROCEDURE

Plans.—Under the head of "Work in Criminal Justice," Dr. Lewis spoke of the three matters to be submitted for consideration at the meeting and announced that the donation of the Rockefeller Foundation had warranted them in undertaking a subject involved in conflicting interpretations of constitutional provisions. The Council was not ready to submit a tentative draft at the 1931 session, but looked forward to doing so next year.

Joint Committee.—At its meeting in August, 1930, the American Bar Association adopted a resolution authorizing its Section on Criminal Law and Criminology to appoint representatives to confer with like representatives appointed by the American Law Institute 'on lines of possible co-operation for the improvement of criminal justice.' This invitation was accepted and action has been taken to include on the joint committee representatives of the

Association of the American Law Schools. The committee, therefore, represents the three principal national organizations of the profession. The appointment of this committee is considered a step of great importance. In the first place it marks the growth of that spirit of cooperation between the bar associations, the Institute and the law schools which is essential if the profession is to perform those large services which the public have a right to expect. In the second place, the personnel of the committee justifies the expectation of valuable guidance as to the principles to be followed if constructive work for the improvement in criminal justice is to be accomplished. As now constituted, the membership of the committee represents much of the best constructive work in the field of criminal law and administration that has been done in the last decade.

Code of Procedure.—Dean Herbert F. Goodrich, Adviser on Professional and Public Relations, presented a report dealing with the "Code of Criminal Procedure," "Plan for Publication of Restatements," "Progress in State Annotation Work," and "Professional Information Concerning Institute Work." On the first subject he said, in part: "It is not part of the scientific work of the American Law Institute to urge the Code of Criminal Procedure upon legislatures and legislative committees. We do not think that the Institute should tell states what they should do about criminal procedure. Such participation in local affairs might assist the passage of a bill in a particular instance, but in the long run it would tend to divert us from the great cause of the improvement of the law for which the Institute is organized. We will cooperate with the organized bar in any state. But the initiative, especially in matters concerning legislation, must come from that bar and not from the Institute."

Rule on Defendant As Witness.—The tentative draft on the Administration of Criminal Justice showed that there was a marked contrariety of opinion among Reporters and ad-

IV. STATE GOVERNMENT

visers as to the proper rule in regard to comment on the fact that defendant did not testify. Six proposals were submitted to the meeting for consideration and the last was adopted. It reads: "VI. The judge, the prosecuting attorney and counsel for the defense may comment on the fact that the defendant did not testify.—Three Advisers (first choice of one)."

AMERICAN JUDICATURE SOCIETY

Judicial Selection.—The annual meeting of the American Judicature Society was held in Washington, May 6. Aside from formal matters and the election of officers there was a discussion on the subject of judicial selection and tenure, the first session, probably, ever devoted exclusively to this subject by any body of lawyers. At the afternoon session announcement was made that the Society had accepted the proposal of the National Municipal League to sponsor jointly a national committee for the study of judicial selection in the most thorough manner possible. The Law Institute of Johns Hopkins University has also been invited to join. Interest in the subject was evidenced in the discussions of the meeting. It was made to appear very plainly that the problems of judicial selection are very much to the front in profes-

sional thinking. In our larger cities there is a crying need for lifting judicial politics to a higher plane. Charles A. Beardsley led the discussion with a description of a plan of appointing judges by the governor subject to confirmation by the voters proposed by the Commonwealth Club of California and approved by the the California State Bar.

State Judicial Systems.—Frank T. Boesel described the non-partisan tradition existing in Wisconsin for several generations but which had lately been broken by the present dominant political faction. Frank W. Grinnell told of the precise operation of the appointment system in Massachusetts. The Maryland system was explained by E. W. Young, as well as in various others. It appeared that the elective plan had been in large part superseded by appointment owing to the fact that most vacancies occur between elections. Appointments to the short term, made by governors, fill often more than half of the judicial places, and the part taken by the electorate is to confirm or reject appointed judges, just as it proposed in California. Chief Justice Marshall of Ohio told of the need for a compilation of data concerning the many systems actually in use in choosing judges and his motion, directing the secretary to obtain this information, was adopted.

STATE ADMINISTRATION

BY JOHN M. MATHEWS

PROFESSOR, UNIVERSITY OF ILLINOIS

THE GOVERNOR

Wisconsin.—In order to bring about closer relations between the governor and the legislature, Governor LaFollette of Wisconsin, in his message to the legislative session of 1931, made two interesting suggestions. These were, first, that provision be made for calling together legislative committees when the legislature is not in session; and, secondly,

that provision be made for a non-salaried Executive Council of not more than twenty members, one-half of them to be members of the legislature and the other half, responsible to the governor, to include representatives of various interests, such as agriculture, labor, manufacture, commerce, and finance. Both of these suggestions were intended to promote more careful planning of the state's

business. "We must," declared Governor LaFollette, "find some way for associating the resources of leadership of the whole state in the task of preparing policies and reviewing the operations of government." The governor's recommendation bore fruit in an act passed by the legislature creating the executive council and defining its duties in accordance with his suggestions.

Connecticut.—Governor Cross, in his message to the legislature, recommended changes in the Constitution and laws providing for strengthening the governor's veto power by extending the time allowed him for approving legislation.

Removal Power.—Two noteworthy decisions were handed down by the courts during the year dealing with the governor's removal power. The supreme court of Missouri held invalid an act of the legislature authorizing the governor to suspend the state treasurer from office. Apparently he can only be removed by impeachment, the method provided in the Constitution. In Virginia the Supreme Court of Appeals held unconstitutional an act of the legislature authorizing the governor to remove certain county officers charged with the collection of public revenues.

Pardon.—In the case of former Governor Ferguson of Texas, who had been impeached, it was held by the court of that state that a legislative pardon could not remove the effects of the impeachment. It was held by the court of Louisiana that when the governor pardons a criminal and the latter again commits the offense for conviction of which the pardon was granted, this second offense is to be considered a first offense within the meaning of the state habitual offender law. The courts in some other states do not agree with this view.

STATE ADMINISTRATIVE RE-ORGANIZATION

Preliminary Surveys.—In their messages to the legislative sessions of 1931, at least half of the governors recommended changes in the state's administrative organization. The suggested changes usually involve the

abolition of certain boards, commissions or other agencies and their consolidation into larger and better integrated departments. Some governors advocate a preliminary survey by expert and impartial investigators as a basis for administrative reorganization, while others do not seem to realize the importance of this. Such surveys were recommended in Arizona, North Dakota and Alabama, while in Maine, Arkansas and North Carolina the results of such surveys were submitted to the legislature for approval.

Maine.—A survey of the state administration was made by the National Institute of Public Administration, the expense being borne by the Spelman Fund. On the basis of this survey an administrative code designed to put its recommendations into effect was introduced into the legislature. This was not accepted by the legislature in the form in which it was introduced but the substitute which was enacted none the less makes important changes in the state administrative structure. Under the code as passed and approved by the governor in April, four departments were created which takes the place of nearly thirty preexisting departments and agencies. The newly created departments are those of finance, health and welfare, education, and fisheries. The department of finance contains three bureaus: accounts, purchases, and taxation. Provision is made for an executive budget and for a considerable degree of centralized purchasing. The reorganization did not go as far as it might have gone. Numerous boards and other independent agencies still remain outside. Nevertheless, it represents a considerable improvement over the preexisting arrangement.

North Carolina.—A survey of the state administration was made by the Institute for Government Research. On the basis of this survey, Governor Gardner made certain recommendations to the legislature of 1931 which resulted in the enactment of legislation which, although not embodying a thoroughgoing reorganization, took several important steps in advance.

IV. STATE GOVERNMENT

All activities with reference to labor were consolidated into one department. The higher state-supported educational institutions were brought together under one board of trustees. Other reorganizations were effected in the highway and health departments and a personnel agency under the governor was created.

STATE CENTRALIZATION

North Carolina.—On account of the virtual bankruptcy of certain local units of government in North Carolina, the legislature of that state was induced to pass an act creating the Local Government Commission, composed of the state auditor, state treasurer and commissioner of revenue and six other members appointed by the governor. This body was vested with drastic powers over local debts and debt service. Its approval must be secured before local governments can incur indebtedness. It

supervises the maintenance of sinking funds to liquidate indebtedness, and if any local unit of government defaults on its bonds, the Local Government Commission appoints an administrator who acts in the capacity of a receiver. Any local officer who fails to comply with the provisions of the act is subject to removal by the governor. The operation of this act is said to have improved the market for securities of local units of government in North Carolina.

Centralized Purchasing.—The influence of the economic depression is seen in forcing some states to adopt more economical methods even against the will of the politicians. One of these improved methods is centralized purchase of supplies, which has been adopted in a considerable number of states. North Carolina and Maine are among those more recently falling in line with this movement.

COUNTY AND RURAL GOVERNMENT

BY ORREN C. HORMELL

PROFESSOR, BOWDOIN COLLEGE

REORGANIZATION

Public Interest.—Although legislation in county and rural government enacted by the 43 legislatures holding sessions in 1931 was not great either in quantity or significance, the general interest was unprecedented. The problems of reorganization of county and rural government, adoption of county manager plans, county executive, consolidation of county offices, elimination of overlapping jurisdictions, county-city consolidation, fiscal reform, and regional planning were given an unusual amount of space by such periodicals as *American Political Science Review*, *National Municipal Review*, *American City*, *Public Management*, *Minnesota Municipalities*, *New Jersey Municipalities*, *Illinois Municipal Journal*, and *Oklahoma Municipal Review*. Experts in the field of political science emphasized the need for re-

form in county and rural government. For example, Professor E. A. Cottrell, of Leland Stanford University, in the June number of *Public Management*, expressed the view widely held among political scientists that "the county as a governmental unit is obsolete and should be thoroughly reorganized, consolidated with other areas, or entirely abolished . . ."

Reform Activities.—Further study of the reform problem was recommended by the Minnesota Tax Conference (March 12-13). The League of Minnesota Municipalities at its annual meeting (June 17-19) expressed the same opinion in a resolution for a thorough study of local government machinery. The Annual Country Life Conference held at Cornell University (Aug. 17-20) was devoted to the problems of rural government. The National Conference on Government held at Buffalo (Nov.

COUNTY AND RURAL GOVERNMENT

9-11) devoted a session to county government. The National Municipal League early in the year created a "work committee" on county government, with Professor John A. Fairlie of the University of Illinois as chairman.

Recommendations of State Governors.—Governor Buck of Delaware suggested a survey to discover whether the county system is antiquated and whether consolidation of some county offices and abolition of others might not be desirable. Governor Brucker of Michigan said that "in the interests of governmental economy, there must sooner or later be brought about a modification in the set-up of the units of local government." He favored consolidation of many local offices, but recommended a preliminary survey before legislative action. Governor Roosevelt of New York, in his 1931 message, again recommended "a complete reorganization and modernization of local government." His recommendations included the appointment of a commission to study the situation and recommend legislation; also the adoption of a constitutional amendment "permitting the legislature to provide modern forms of government for any county, subject to referendum within the country." Governor Gardner of North Carolina advocated the elimination of "inefficiency and maladministration" in local finances, through closer state supervision over accounting, budget making, debts, and purchasing procedure. He also advocated the "mandatory consolidation of some counties."

REPORTS OF OFFICIAL COMMISSIONS

California.—The California Commission on County Home Rule (see *THE AMERICAN YEAR BOOK*, 1930, p. 118) submitted its final report to the legislature. The report comprises one of the most thorough surveys produced to date. Among other things the commission recommended the "classification of counties for the purpose of adopting optional charters"; a freer use of "municipal" pow-

ers by counties; permission to operate utilities for county purposes; vesting the government of special districts in the board of county supervisors; further extension of county-city consolidation; distinct separation between legislative and administrative functions; creation of a chief executive with large appointing powers; consolidation of functions or offices within the county, between counties, or between counties and cities; and the creation of an Advisory County Commission for the purpose of study and advice on fiscal matters, personnel, statistics, and reporting.

New Jersey.—The New Jersey Commission to Investigate County and Municipal Taxation and Expenditures made a noteworthy report on "the organization, functions, and expenditures of local government in New Jersey." The director of the commission was Professor Harley L. Lutz, of Princeton University. Recommendations were based upon the following principles: 1. Simplify the local governmental organization and structure; 2. Establish a basis for intelligent criticism of public expenditures through the development of standards of service and costs; 3. Recognize the importance of state and local cooperation, through the inauguration of cooperative home rule; 4. Re-allocate the responsibility for performing various services according to logical analysis rather than by accident or tradition; 5. Provide for popular determination of governmental policies, and for administration by expert administrators; 6. Abolish the system of patronage.

Two plans of organization were suggested: First, "the strong county plan," and second "the county-municipal segregation plan." Under the first plan such functions as roads, institutions for delinquents and dependents, and courts, would be transferred to the state, while such municipal functions as police, fire, traffic regulation, assessment and collection of taxes, and local health and welfare functions, would be transferred from municipalities to the county. Thus would be created "a vastly more responsible county government."

IV. STATE GOVERNMENT

Complete county-municipal consolidation was recommended for the metropolitan counties.

The second plan, "county-municipal segregation," would provide for "a single form of local government over any area, a city government if the usual and characteristic features of urban life were present, or a single consolidated special type county government for the rural areas and the smaller hamlets which were not recognized as independent municipalities." Under such a form it was held "all duplicating and overlapping local agencies will disappear."

Minnesota.—The Interim Committee on Taxation in Minnesota reported in favor of consolidation of counties into fewer, larger counties; consolidation of townships or the transfer of their functions to counties, organization of schools on a county rather than township basis, uniform accounting, budget making and bond issue systems, and centralized purchasing.

Virginia.—A commission of five members, appointed by the governor for the biennium, 1930-1932, is studying comparative county government in that state.

Other States.—The Michigan legislature, 1931, created a commission to inquire into county, township, and school district government. Similar commissions were set up by the legislatures of Pennsylvania and Iowa.

PROPOSED LAWS

Ohio.—The much discussed county reorganization amendment to the Ohio constitution (see *THE AMERICAN YEAR BOOK*, 1930, p. 118) was submitted to the legislature. It was sponsored by the Ohio Chamber of Commerce and various civic organizations throughout the state. The measure passed the Senate but was killed in the House, largely on account of opposition from county politicians and rural members opposed to centralization of authority. The amendment was intended to vest in the legislature power to provide a modern system of county and rural government, and to permit the urban counties (especially Cuyahoga

County) to become "charter" counties and to adopt their own form of government and exercise municipal home rule powers.

Oklahoma, Iowa and Texas.—The Oklahoma Senate passed a county manager bill but it died in a committee of the House. A similar bill based on the National Municipal League's *Model County Manager Law* was defeated in the Iowa legislature. A measure providing for referendum on a county home rule plan permitting the adoption of the county manager system passed the Texas House by a two-thirds majority but was lost in the Senate by one vote.

COUNTY MANAGER PLAN

According to the *National Municipal Review* (Dec., 1931) the county manager plan was being considered by 17 counties in 12 states. Montana adopted a county manager enabling act, especially in the interest of Blaine County. The outstanding victory for the county manager plan was its adoption by popular vote in Arlington County, Virginia. The new form becomes effective Jan. 1, 1932. The government of the county rests primarily in an elected county board of five members possessing legislative powers only. The Board is authorized to hire a manager who is the administrative agent of the Board. The manager also appoints his subordinates and draws up the tentative county budget.

FISCAL ADMINISTRATION

North Carolina.—In the field of financial administration North Carolina and Virginia again deserve special notice (see *THE AMERICAN YEAR BOOK*, 1930, p. 117). Confidence in state government and suspicion of local governments led North Carolina in 1931 to take over as of July 1 all roads in the state. All local road districts were dissolved and the state aided by a six-cent gasoline tax now builds and maintains all roads under the direct supervision of the state highway commission. Likewise the state took over the administration of education. Now "every teacher, janitor, and truck driver becomes an em-

COUNTY AND RURAL GOVERNMENT

ployee of the state. All supplies are to be purchased by the state purchasing agent." The state assumed the cost of a minimum school term of six months. The counties and school districts bear the cost of a school term in excess of six months and are required to construct and repair school buildings. (See *American Political Science Review*, Nov., 1931). State control of local governments in North Carolina was further extended by a law requiring the approval of a state board for the issuing of bonds or loans in anticipation of taxes.

Virginia.—The attempt to bring county fiscal officers under state control in Virginia received a temporary check, at least, by the decision of the Virginia supreme court, which held as unconstitutional that section of the Virginia code, which gave the governor the power to suspend the treasurer of any county for failure to perform his legal duties. The decision was based on the principle that failure to perform a legal duty is a question to be decided by judicial rather than by executive or legislative procedure.

Iowa.—Under the sponsorship of the Des Moines Bureau of Municipal Research a bill was passed by the Iowa legislature abolishing the fee system for payment of county officials.

Other States.—The Indiana plan of complete state supervision of local finances was widely discussed during the year. The New Jersey Tax Commission in its recommendations suggested the adoption of a scheme, similar to that of Indiana, in which a state agency would have the power of veto over proposed local expenditures and bond issues upon petition of ten local taxpayers. The commission also favors the creation of a state office through which all local government bonds must be sold. California legislature (*Laws*, 1931, ch. 386) made possible further economy by permitting "the board of supervisors by proper ordinance" to consolidate two or more county offices.

CITY-COUNTY CONSOLIDATION

The most noteworthy step during 1931 in the movement for city-county consolidation was taken by the city and county of San Francisco in the new freehold charter adopted by the voters March 26. The charter contained comprehensive provisions relating to the consolidation of San Mateo County and San Francisco. The purpose of the provisions was the political integration of the metropolitan area and the creation of a greater San Francisco with more room and legal authority for expansion. The plan provides for local self-governing boroughs within the new city-county possessing usual powers of municipalities except those relating to police, fire, health, building inspection, and water supply.

COUNTY AND REGIONAL PLANNING

New York.—Public interest in regional planning was strengthened during the year by the educational campaigns, legislative proposals, and instructive reports of such organizations as the Regional Plan Association, Inc., of New York, The State Regional Planning Commission of New Jersey, and the Regional Planning Commission of Hamilton County, Ohio. A bill sponsored by the New York association providing for an improved county planning law passed the legislature but was vetoed by Governor Roosevelt on the ground that it did not adequately provide for the administration of the county road fund. The bill modified to meet the Governor's objections will be submitted to the next legislature.

New Jersey.—The State Regional Planning Commission of New Jersey prepared a "Regional District Government Bill" providing for four regional districts with authority to finance, construct, and administer "inter-municipal, inter-county, and inter-state public works and improvements." The bill evidently was too advanced to receive the approval of the legislature, nevertheless the Commission is continuing its educational campaign and hopes for approval in

IV. STATE GOVERNMENT

the near future. The Mercer County, New Jersey, Planning Commission, appointed in 1929, prepared and presented a comprehensive master plan for the county which will be a general guide for the future development of highways, parks, aviation fields, sewerage, water supply, etc.

Ohio.—The Regional Planning Commission of Hamilton County,

Ohio, organized in 1929, submitted its first report in 1931, in which a comprehensive regional plan for Cincinnati and the adjoining twenty-four cities and towns in Hamilton was set forth. The plan included provisions for subdivision control, major thoroughfares, parks and boulevards, and zoning supported by adequate base maps.

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

(For further information, the reader may address the following organizations)

AMERICAN CONSTITUTIONAL LEAGUE,
27 William Street, New York City.

AMERICAN DEFENSE SOCIETY, INC., 154
Nassau Street, New York City.

CIVIL SERVICE FORUM, 1756 46th St.,
Brooklyn, New York City.

NATIONAL ASSN. FOR CONSTITUTIONAL
GOVERNMENT, 716 Colorado Bldg.,
Washington.

NATIONAL CIVIL SERVICE REFORM
LEAGUE, 519 Fifth Ave., New York
City.

NATIONAL MUNICIPAL LEAGUE, 261
Broadway, New York City.

NATIONAL STATE ASSN., 644 Drexel
Bldg., Philadelphia, Pa.

VOTERS' EDUCATIONAL LEAGUE, 524
First Avenue, New York City.

DIVISION V

MUNICIPAL GOVERNMENT

CITY POLITICS

BY CLINTON ROGERS WOODRUFF

HONORARY SECRETARY, NATIONAL MUNICIPAL LEAGUE

NEW YORK

Hofstadter Investigation.—The outstanding feature of the New York political situation has been the investigation of the Hofstadter Legislative Committee. In his appeal to Governor Roosevelt to call a special session of the Legislature for the removal of legal obstacles in the way of the committee, Samuel Seabury, the committee's counsel referred to the presence of wide-spread corruption in the city government. He told the Governor that the committee had been met with every obstruction it had been possible for the beneficiaries of the existing vicious system to throw in its way. A few hours before making this appeal to the Governor, Judge Seabury had examined Tammany Chief Curry before the committee. The latter had told how he personally had "found" a judge who would hear an application for a stay of execution of the sentence imposed on Dr. William F. Doyle for contempt of the committee in refusing to answer questions concerning the final disposition of fees exacted by Doyle for successful appearances before the Board of Standards and Appeals. Testing the committee's power was a matter of great importance to Chief Curry and keeping Dr. Doyle out of jail as long as possible was apparently of equal importance.

Silbermann Decision.—Chief Curry's attitude and conception of his obligations to members and friends of his organization had been

reflected by lesser lights in that organization in connection with Judge Seabury's earlier probings. It was appropriate that the committee's counsel should turn to broader aspects of the situation soon after obtaining from the Appellate Division Justices a unanimous finding that Jesse Silbermann was unfit to remain in judicial office because he had been "improperly influenced by political consideration". The Silbermann decision according to the Citizens Union was a great victory for the public. It was heartening to advocates of a free judiciary who believed it would have an important influence for good upon judicial affairs generally. Some of the more optimistic believed the Union declared even that it might give pause to political leaders who, like Mr. Brown of the Bronx, view their intercessions with judges as matters of "civic duty" incidental to the important business of "making Democrats." It may be, however, that Tammany leaders adhere to the policy of not reading court decisions. Chief Curry, in his testimony before the Hofstadter Committee, gave no indication that he had ever heard of the Silbermann decision.

Public Attitude.—The investigation goes forward with an aroused public behind it, and greatly strengthened powers. Habitual apathy has been changed to anger and resentment by a series of shocking revelations, beginning with the presentment of the January, 1930, ad-

V. MUNICIPAL GOVERNMENT

ditional Grand Jury in New York County, concerning conditions in the inferior criminal courts, and continuing through Charles H. Tuttle's probe of the income tax returns of certain political leaders and judges, Hiram C. Todd's investigation of charges of the purchase and sale of public offices and his unsuccessful prosecution of Ewald and Healy, and Judge Seabury's amazing disclosures that intimidation, bribery and systematic framing of the helpless has been going on under the very eyes of certain magistrates. The climax came with the murder of a prospective witness in the Seabury inquiry, just before she had been expected to testify against certain policemen.

The Committee of One Thousand, organized under the leadership of William Jay Schieffelin, Chairman of the Citizens Union, to arouse public opinion in behalf of a city-wide and non-partisan investigation, urged citizens to make the investigation effective by fearlessly testifying regarding racketeering and persecution, official or unofficial. This Committee seeks to open every source of graft and corruption which can be found and to sift out the cases which may be turned over to the legislative committee. It has been doing much of this work through a sub-committee of lawyers under the chairmanship of Maurice P. Davidson, with divisions in every borough.

Magistrate Norris.—Jean Hortense Norris, New York City's first woman magistrate, was tried by five justices of the Appellate Division of the Supreme Court who unanimously found her guilty of judicial malfeasance and ordered her removed from office. Mrs. Norris, long known as "woman's judge of women," was the first magistrate to be ousted as a result of Samuel Seabury's investigation of Manhattan's inferior courts. She was convicted on five counts: (1) altering the stenographic record of a case appealed from her court; (2) jailing as a wayward minor on hearsay evidence a girl artist found living with a married man by a Methodist deaconess; (3) ordering special probation reports to support

her convictions of prostitutes who had appealed; (4) buying stock in bail bond concern that did business in her court; (5) exploiting her office for \$1,000 from a yeast company. She was found "judicially unfit" to occupy the bench.

Tammany Tickets Elected.—Notwithstanding these events and the disclosures of the Legislative Committee the Tammany tickets were elected by the usual large majorities. There was nothing to indicate that the city had been stirred deeply by the revelations. Manhattan returned Samuel Levy as Borough President with a plurality of 181,000, a record. Chief Curry failed however in his determined drive to win control of the Fifteenth Assembly District. Abbot Low Moffat, a member of the Hofstadter committee, withstood the attacks of Tammany and the reconstructed organization in the Fifteenth, winning by 1,000. While retaining control of the local offices, which is vital to Tammany, Tammany failed to win the Assembly. The Democrats never made a harder fight to reach that end, so as to split the Legislature and end the life of the Hofstadter committee. The Assembly remains Republican, which is interpreted as meaning that the Seabury investigation will continue.

CLEVELAND

For eight years Cleveland has had a city manager form of local government, with results generally regarded as beneficial, although politically the conditions have been turbulent and unsatisfactory, with numerous attempts to vote the form out. The latest effort was successful by a vote of 61,267 against 51,970, the total registration being 239,000. In the view of The Citizens League a considerable percentage of that number apparently voted their resentments and not their appreciations. As a result many idols were smashed and many political ambitions were badly shattered. It was an off year for the forces which are usually for progress and reform. The voters were in a rebellious mood and they

voiced their mood by voting "agin" things in general. The city manager charter was repealed. The Bar Association slate was smashed. The citizens' school candidates were rejected. The municipal light bonds were defeated. The needed state welfare bonds barely avoided defeat. The only forward looking issue which received approval was the one-mill tax levy for unemployment relief; and when that issue had 43,927 votes against it. The three daily newspapers, the Chamber of Commerce, the Citizens League, the League of Women Voters, several other civic organizations and the Republican party urged the voters to keep the city manager charter. They pointed out the economies under the manager plan and the serious defects in the proposed amendment. A majority of the voters rejected all of this advice and followed the lead of the small group who had fostered the amendment, and the Democratic party organization which had supported the manager plan in two previous campaigns.

MAYORALTY ELECTIONS

Philadelphia.—On the crest of the largest plurality (330,999) ever cast in a mayoralty election, Hampton Moore was elected mayor a second time. No Philadelphia mayor may be a candidate to succeed himself, but there is no law against his trying for the office subsequently. For 50 years, however, no ex-mayor had won a second term.

Detroit re-elected Mayor Frank Murphy. Last year he almost made the city bankrupt with his dole system of unemployment relief and got in bad repute with almost everybody in town except the poor people. Frank Couzens, 29-year-old son of Senator James Couzens, headed the ticket of councilman, was elected and automatically became president of the city council.

Reading, Pa.—For the first time since the War, Republicans and Democrats fused and defeated by a decisive margin its four-year-old Socialist regime headed by Mayor John Fry Stump.

Madison, N. J.—Mrs. Marcellus Hartley Dodge let it be understood that if Democratic Frank Cook were elected mayor she would give Madison a new municipal building, and he was elected.

Dearborn, Mich. re-elected Mayor Clyde M. Ford, a nephew of Henry Ford.

Masillon, Ohio.—Aged 76—"General" Jacob Coxey, who led an army of unemployed on Washington 37 years ago, was elected Republican mayor.

Other Cities.—The three largest Connecticut cities—Hartford, New Haven, Bridgeport—elected Democratic mayors, and Worcester, Mass. and Manchester, N. H., homes of rock-ribbed Republicans, also elected Democratic mayors.

SEATTLE

In Seattle an event of more than usual interest was the recall election in which Mayor Frank Edwards was recalled. Since the last recall election the law had been changed, so that now the voters passed simply on the question whether the individual in office should be recalled. They did not vote on his successor who was chosen by the City Council. In this case the Council surprised the supporters of the recall by choosing as mayor Robert H. Harlin, a member of the City Council representing organized labor. Mayor Edwards had had no previous training or experience that would justify anyone in believing he was competent to fill the office of mayor. He defeated Mrs. Landes, who was a capable mayor, very largely because she was a woman. His appointments to office were generally poor. He succeeded in serving the first two years without unusual incident and did better in the office than was anticipated.

He would undoubtedly be in office at the present time had it not been for a political mistake. The day before the councilman election he removed Mr. Ross as head of the City Light Department. Mr. Ross had been head of that department for well on to twenty years and had at all times been active in pushing its

V. MUNICIPAL GOVERNMENT

interests, and was regarded as capable in that line, but not efficient as an executive. His department not being supported by taxation was given a much freer hand in the matter of expenditures. He had always spent freely to popularize City Light. He had been active in the development of the great Skagit project into which Seattle will be called upon to put anywhere from fifty to seventy-five million dollars before it is completed. He had made himself the symbol of municipal ownership. Seattle had always been inclined that way and the removal of Mr Ross was immediately interpreted as an attack upon municipal ownership in general and City Light in particular. It struck many people as being unfair in the Mayor to make the change the afternoon be-

fore the election. It undoubtedly produced a sufficient re-action to elect the three councilmen favorable to Mr. Ross and defeat those in office who were favorable to the Mayor. Immediately thereafter, with considerable newspaper support, a recall movement was organized. Mayor Edwards tried every legal means to prevent the recall, but those means, as they nearly always do, tended to cost him political support. Only one of the newspapers gave him any assistance and that was half-hearted and of little value. It was apparent some time before the election that he would be recalled.

Mayor Harlin is a man of limited education but of very considerable common sense. He has been in the Council some three years and has kept a level head.

TYPES OF MUNICIPAL GOVERNMENT

By CLINTON ROGERS WOODRUFF

HONORARY SECRETARY, NATIONAL MUNICIPAL LEAGUE

CITY GOVERNMENT FORMS

The Detroit Bureau of Governmental Research sent all cities of 30,000 population and over a questionnaire, on the returns of which is based the study, *The Form of Government in 288 American Cities* published in February, 1931, "The form of American municipal government appears to be in constant flux," states

the report. "These trends can be found by comparison of this report with reference to the tables carried in the Financial Statistics of Cities (United States Census Bureau), the volume for the odd-numbered years, terminating with the 1923 volume."

A summary of this report shows the following results:—

Census Rank 1930		Type of Govt. (1)	Type of Election (2)	No. Councilmen and Election by Wards—At Large	Term of Council (Years)	Do Terms Over-lap?	Annual Salary of Council-men	Term of Mayor (Years)	Annual Salary of Mayor
1	New York, N. Y.....	MC	P	65	6	2	No \$2,000	4	\$40,000
2	Chicago, Ill.....	MC	NP	50	..	2	No 3,000	4	18,000
3	Philadelphia, Pa.....	MC	P	22	..	4	No 5,000	4	18,000
4	Detroit, Mich.....	MC	NP	..	9	2	No 5,000	2	15,000
5	Los Angeles, Calif.....	MC	NP	15	..	2	No 4,800	4	10,000
6	Cleveland, Ohio†.....	Mgr.	NP	25	..	2	No 1,800	2	7,200
7	St. Louis, Mo.....	MC	P	..	29	4	Yes 1,800	4	10,000
8	Baltimore, Md.....	MC	P	18	1	4	No 2,500	4	12,000
9	Boston, Mass.....	MC	NP	22	..	2	No 1,500	4	20,000
10	Pittsburgh, Pa.....	MC	P	..	9	4	Yes 8,000	4	10,000
11	San Francisco, Calif.....	MC	NP	..	18	4	Yes 2,400	4	6,000
12	Buffalo, N. Y.....	MC	P	9	5	..	2,500	4	12,000
13	Milwaukee, Wis.....	MC	NP	25	..	4	No 2,400	4	12,300
14	Washington, D. C.....	Com.	..	..	..	3	9,000	..	..
15	Minneapolis, Minn.....	MC	NP	26	..	4	Yes 1,800	2	11,000

TYPES OF MUNICIPAL GOVERNMENT

Rank	City	Type of Govt.	Type of Election	No. Councilmen and Election by Wards—At Large	Term of Council (Years)	Do Terms Overlap?	Annual Salary of Councilmen	Term of Mayor (Years)	Annual Salary Mayor
16	New Orleans, La.	Com.	NP	5	4	No	6,000	4	10,000
17	Cincinnati, Ohio	Mgr.	NP	9	2	No	5,000	2	6,000
18	Newark, N. J.	Com.	NP	5	4	No	7,500	4	8,250
19	Kansas City, Mo.	Mgr.	NP	4	5	No	2,400	4	5,000
20	Seattle, Wash.	MC	NP	9	3	Yes	3,000	2	7,500
21	Indianapolis, Ind.	MC	P	9	4	No	600	4	7,500
22	Atlanta, Ga.	MC	NP	26	13	No	600	4	6,000
23	Rochester, N. Y.	Mgr.	NP	4	5	Yes	1,500	2	6,000
24	Jersey City, N. J.	Com.	P	5	4	No	7,500	4	8,000
25	Louisville, Ky.	MC	P	12	2	No	1,200	4	5,000
26	Portland, Ore.	Com.	NP	5	4	Yes	5,000	4	6,000
27	Houston, Texas	Com.	NP	4	2	No	3,600	2	7,500
28	Toledo, Ohio	MC	NP	20	2	No	660	2	7,500
29	Columbus, Ohio	MC	NP	7	4	Yes	1,000	4	6,000
30	Denver, Colo.	MC	NP	9	2	No	1,200	4	6,000
31	Oakland, Calif.	Com.	NP	5	4	Yes	3,600	4	4,200
32	St. Paul, Minn.	Com.	NP	7	2	No	4,500	2	5,000
33	Dallas, Texas	Com.	NP	5	2	No	4,000	2	7,500
34	Birmingham, Ala.	Com.	NP	3	4	No	7,000	4	8,000
35	San Antonio, Texas	Com.	NP	5	2	No	6,000	2	8,000
36	Akron, Ohio	MC	NP	10	3	No	1,000	2	7,000
37	Memphis, Tenn.	Com.	NP	5	4	No	7,000	4	12,000
38	Providence, R. I.	MC	P	50	2	No	....	2	7,500
39	Omaha, Nebr.	Com.	NP	7	3	No	4,500	3	5,000
40	Syracuse, N. Y.	MC	P	19	2	No	1,200	2	10,000
41	Dayton, Ohio	Mgr.	NP	5	4	Yes	1,500	4	1,800
42	Worcester, Mass.	MC	P	40	2	No	None	2	7,500
43	Oklahoma City, Okla.	Mgr.	NP	8	4	Yes	10*	4	1,000
44	Richmond, Va.	MC	P	32	2	Yes	None	4	8,000
45	Youngstown, Ohio	MC	NP	7	2	No	....	4	7,200

(1)—Type of Government: MC—Mayor-Council Mgr.—City Manager Plan. Com.—Commission Plan.

(2)—Type of Election: P—Partisan. NP—Non-Partisan.

* Amount per meeting.

† Abandoned City Manager Plan in 1931 elections.

COUNCIL-MANAGER CHARTERS

Adoptions and Repeals.—These cities adopted the city manager form during 1931: Brewer, Dexter, Bangor, Mt. Desert, Washburn in Maine; Binghamton and Utica, N. Y.; Asheville, N. C.; Jacksonville, Pensacola, and St. Petersburg, Florida; Belton, Tex.; San Diego, Calif. Two cities abandoned the plan,—Brattleboro, Vt. and Cleveland. The New York optional city government law of 1914 applies to Binghamton, New York, regardless of the "repealer" passed by the city council, and Supreme Court Justice E. W. Personius decided in granting a writ of mandamus requiring the city to hold a referendum on the city manager plan, which it did and the vote was in favor of the plan.

Rejections.—Euclid, Ohio, a city with a population of 12,751, defeated proposed council-manager charter

on June 2, by a vote of 2,106 to 1,020, and Berea, Ohio, with a population of 5,967 rejected a similar proposal on May 28 by a vote of 1,097 to 298. Toledo rejected two proposed city manager charters.

Oakland, California.—O. E. Carr became the first city manager of Oakland, Calif., on July 1, at a salary of \$20,000. No other municipal administrative official has equaled Mr. Carr's record of seventeen years of continuous public service as city manager in six different cities.

Dallas, Texas.—Dallas adopted the city manager form in November, 1930 and on April 7, 1931 elected its first Council, choosing the entire Citizens' Charter Association ticket by majorities that almost approached unanimity. Three were elected at large and six from districts. The campaign was unique in that no one of the candidates made a speech or

V. MUNICIPAL GOVERNMENT

promised anyone anything. At a caucus on April 8 the council-elect chose T. L. Bradford to take the office of mayor on May 1. He has the same vote and compensation as the other council members, and has no veto power. John N. Edy was selected as city manager.

NEW CHARTER FOR SAN FRANCISCO

"Strong Mayor" Type.—The voters of San Francisco, California on March 26, approved a new municipal charter framed by a board of freeholders. It establishes the "strong mayor" type of government, removing from the Board of Supervisors its executive functions. The city manager plan had been urged upon the freeholders by the San Francisco Bureau of Governmental Research. Although that plan was not utilized, the Bureau approves the new charter as a distinct advance over its 30-year-old predecessor. It was favored by the Chamber of Commerce, which lists the following advantages, among others: It provides for fewer elective officers, thus shortening the ballot, and as those retained are, in most cases, important offices from the standpoint of policy, the voters will be enabled to concentrate their attention on these.

The board of supervisors is reduced from eighteen to eleven members and is restricted to legislative matters.

Responsibility for the preparation and submission to the board of supervisors of an executive budget is vested in the mayor. These executive budget powers, together with the powers of appointment, will make the mayor the chief executive of the city in fact as well as in name.

A chief administrative officer is set up as an appointee of the mayor for the supervision of those offices and departments of the city which are not under the management and control of boards and commissions. This will make for improved coordination and more efficient business administration of these activities.

A public utilities commission is created, to be appointed by the mayor, and subject to removal by

recall or on charges, in the same manner as elective officers. The new charter provides, as far as can be provided by law, for businesslike management of the utilities owned by the city, and for adequate powers of the commission as to rates, finances, betterments and extension.

An elaborate disbursing and accounting system is provided, which together with the executive budget procedure and the powers vested in a controller for the checking and approval of disbursements, should give the city a sound financial system and result in savings.

The new charter improves procedure as to bond issues, permits, licenses, purchasing, pensions, civil service, traffic regulation and the control of education.

BOARD OF PUBLIC SAFETY FOR PROVIDENCE

Under the terms of a law passed by the Rhode Island Legislature a Board of Public Safety was created for the city of Providence, which on April 15 took over the control and operation of the Police and Fire departments. The new Board consists of three members, appointed by the Governor. To this new Board were transferred the duties and powers formerly exercised by the Board of Police Commissioners and the Board of Fire Commissioners, and in addition a number of other powers, some of them previously exercised by the City Council. In the matter of traffic control and regulation, particularly, the powers formerly vested in the Mayor, the Board of Aldermen, the City Council, the Traffic Engineer, or other competent authority concerning the regulation and control of traffic in the city, were conferred upon and vested in the new Board, which is empowered to appoint the Traffic Engineer, the Public Services Engineer, and the personnel of the office. The Board is empowered to make all needful rules and regulations for the control of traffic.

CHICAGO

In January, Mayor Cermak of Chicago, then President of the County

TYPES OF MUNICIPAL GOVERNMENT

Board of Cook County, announced the appointment of thirty citizens to serve on a commission to work out a plan for the coordination and simplification of local governments in Cook County including Chicago, to be known as the Citizens' Commission on Public Finance and Economy. Included among the members are President Robert M. Hutchins and Professor Charles E. Merriam of the University of Chicago, and President Walter Dill Scott of Northwestern University.

MUNICIPAL GOVERNMENT IN NEW JERSEY

A Commission to Investigate County and Municipal Taxation and Expenditures was created by the New Jersey Legislature early in 1930. It employed Professor H. L. Lutz of Princeton University to direct its work and the staff assistance of Grifenhagen & Associates, of Chicago, to make its investigations. A 273 page report contains the fruits of the first year of the Commission's labors. This report has been published in three sections. The first one deals with "some aspects of local government in New Jersey," and the third with "a discussion of some factors contributing to the high cost of local government, and a suggested program of revision and reconstruction." The first two sections are largely descriptive. The third section attempts an analysis of the present conditions and makes recommendations for changes. This analysis of present conditions shows mal-administration, defective local governmental organization, absence of effective means of controlling expenditures, and exaggeration of the home rule doctrine, to be the chief difficulties. Proposals of the commission for meeting these difficulties are: (1) to simplify the local government organization and structure; (2) to establish a basis for intelligent criticism of public expenditures, through the development of standards of service and costs; (3) to recognize the importance of state and local cooperation in providing governmental services; (4) to relocate the responsibility for per-

forming various services according to logical analysis rather than by accident or tradition; (5) to recognize the distinction between the policy-determining function and the administrative function, and (6) to eliminate the system of patronage.

HOME RULE

Milwaukee.—Enemies of home rule were again successful in withholding from the citizens of Milwaukee the right granted them by the constitution of the state to adopt a charter for the government of their city. Two years ago, through the manipulation of this group, the legislature passed an act which made it a practical impossibility to adopt a comprehensive charter by referendum vote. During the 1931 session two attempts were made by the friends of charter revision to modify this law. Both attempts failed. Those favoring this amendment were the common council of the City of Milwaukee, the mayor, the League of Women Voters, the League of Wisconsin Municipalities, the Citizens' Bureau, the City Charter League, the City Charter Committee of the City Club. The incident offers ample evidence of the need of home rule for cities, when political manipulation at Madison can deny the citizens of Milwaukee their constitutional privileges on matters of purely local concern.

Omaha.—An Omaha taxpayer brought suit to enjoin the city from establishing a municipal university as authorized by a Nebraska Law passed in 1929. His contention was that the Legislature could not authorize the university because the city was operating under a constitutional home-rule charter. The Nebraska Supreme Court in the case of *Carlberg v. Metcalf*, 234 N. W. 87, refused the injunction on the ground that "in such cities, state legislation is not excluded upon such subjects as pertain to state affairs as distinguished from strictly municipal affairs. . . . The establishment and maintenance of a university in the city of Omaha relates to the matter

V. MUNICIPAL GOVERNMENT

of education. Education has always been a matter of state concern in Nebraska as distinguished from a matter of strictly municipal concern . . . This university was not forced upon the city of Omaha. It was established as provided by a general

law of the state. A petition of 10 per cent of the registered voters caused the Council to submit the matter to a vote, and a majority of the voters at said election voting on the question voted to establish and maintain such university."

MUNICIPAL FUNCTIONS

BY CLINTON ROGERS WOODRUFF

HONORARY SECRETARY, NATIONAL MUNICIPAL LEAGUE

POLICE INVESTIGATION IN CHICAGO

Department Survey.—While William F. Russell was Police Commissioner of Chicago from January, 1929, to June, 1930, a Citizens Police Committee was formed and at his request given an opportunity to make a thorough survey of the Chicago Police Department. Four institutions, —the Chicago Crime Commission, the University of Chicago, Northwestern University, and the American Institute of Criminal Law and Criminology, accepted the responsibility, and with an advisory committee of leading citizens and an operating committee of specialists headed by Bruce Smith of the National Institute of Public Administration and a competent staff, the investigation was made. Their report, dated Jan. 1, 1931, was published in book form by the University of Chicago Press. Funds were made up of private contributions for the purpose.

Recommendations.—The Citizens' Committee throughout its study confined its efforts to the administrative functioning of the Police Department, questions of corruption being excluded. It is an impartial and non-partisan survey. The report is, a vivid picture of present conditions in the Department, and obstacles which make it either difficult or impossible to render efficient service are plainly stated. The police force is shown in its setting as a part of the city government and of the machinery of criminal justice. Recommendations as to how the effectiveness of the

Police Department can be immeasurably improved with the present facilities and personnel by a reorganization of the administrative machinery are perhaps the main contributions of the Committee. The Civil Service Commission's responsibilities are analyzed, and all phases of police work systematically reviewed. Dr. Leonard D. White, Chairman of the Operating Committee, emphasizes these two points in his foreword: "The mayor of Chicago, and he alone, can dictate the kind and quality of police administration which the city shall receive." "The City Council and Civil Service Commission likewise must prepare to cut away traditions and practices which are the growth of many years and which now threaten to stifle even the most rudimentary of police service."

A Scientific Crime Detection Laboratory for Chicago has been organized "for the purpose of engaging in the practical application of all branches of Science to the detection of crime." The officers, with Col. Calvin Goddard as managing director and editor, have a competent staff in all lines of police work and investigation. The Laboratory offers its services to police officials and to persons desiring expert analysis of the physical traces of a crime. It is affiliated by contract with Northwestern University and all appointments to the staff are approved by the University. Its organ, *The American Journal of Police Science*, is a bi-monthly publication, but it is expected that it will

soon become a monthly. This is the first time that the United States has had a publication devoted entirely to the field of criminal investigation. Germany has two such magazines, and England and France each has a similar journal on police science. Col. Goddard, the editor, is an expert in ballistics and contributes articles on firearm identification. Technique of finger and palm print traces, analysis of dust traces, movietone in court, circumstantial evidence from hairs and fibres are titles of articles which give an idea of the scope of the magazine.

POLICE COMMUNICATION

It is generally conceded that the major police organizations in New York State function efficiently within their respective spheres of responsibility. This is true of municipal and state police, as well as of the forces maintained by a majority of the villages and counties. The extent to which these organizations are handicapped by the speed of modern transportation is not, however, generally realized outside of police circles. The automobile is now almost universally employed as the means of escape by all types of criminals, with the result that in many cases the criminal is out of reach of the police before effective action can be taken. Police officials generally agree that the prompt apprehension of criminals under present conditions requires co-ordinated action by all law enforcement agencies in the general vicinity of the crime. To bring this about effectively, it is essential that all such agencies be furnished promptly all available information regarding the crime, as well as suggestions on procedure. The solution of the problem lies in developing a communication system specially designed for coordinating police activities. The primary requirement of such a system is the ability to disseminate quickly and simultaneously to police forces surrounding the larger centers, the essential information regarding these cases. The system should be sufficiently flexible to afford adequate

protection to the rural sections naturally tributary to the centers of population and the smaller cities in this area must be afforded means of communication with other police departments in the area. Knowledge of the message must be limited solely to the police, a written form of communication must be employed and the messages must be readily adaptable to filing purposes. Of the various means of communication available to provide a system of this nature, experience has shown that the telephone typewriter service is best adapted. It is generally recognized by police officials and is borne out by the considerable number of such systems already in operation; for example, those in Pennsylvania, New Jersey and Connecticut and a large number of the major cities of the country. A layout for this purpose has been prepared by the New York Telephone Co.

CURRENT POLICE DEVELOPMENTS

Among the important police developments of the year are the extension of radio broadcasting facilities to patrolling police cars in 51 American cities; the rapid and impressive growth in the registration area for uniform crime reports, collected by the Department of Justice from American cities published monthly; the generally intelligent handling of organized public disturbances by the police during the past winter, which in nearly every case resulted in the restoration of order without the use of force; establishment of a police region in the area surrounding Cincinnati and lying both in Ohio and Kentucky, through the cooperative action of the police authorities including the rural police agencies as well as those of the large and small cities.

NEW YORK'S CRIME PREVENTION BUREAU

In June a new law gave official recognition and standing to the Bureau of Crime Prevention in New York City that had already been in operation for more than a year and a

half. The 1930 report of Police Commissioner Edward P. Mulrooney indicated that this Bureau was able to justify itself by the work accomplished. The Bureau's primary purpose is the prevention of crime and delinquency among minors. In 1930 the Bureau handled 5,215 cases of minors in need of social treatment. Over a hundred different social agencies referred cases to it. This Bureau has a Deputy Commissioner, instead of a director, as executive officer. As assistant to this Deputy Commissioner there is an officer from the uniformed force of rank not less than Captain.

FIRE INSTRUCTION

Courses of Instruction.—Heat having no terrors for fire fighters, the advent of summer in 1931 found vigorous activity in courses of instruction for firemen in many quarters. The work of fire departments is greatly different from what a former generation knew, and calls for much special knowledge and trained skill. As stated by the Industrial Commission of Wisconsin: "In this onward march the fire school can help greatly. It acts as a meeting point to compare means and methods. Expert drill masters lead in movements and evolutions, trained instructors teach methods of life-saving, resuscitation and first aid, and experienced, practical men discuss machinery, tools and modern methods . . . It is important that bright, active, resourceful men be selected to attend who can get most out of a short course and are best able to instruct and train the members at home."

New York Training Schools.—In New York State three types of instruction were carried out this year. The New York State Conference of Mayors and Other Municipal Officials, in cooperation with the state Fire Chiefs' Association, has been conducting training schools for firemen since 1929. Zone fire training schools were in operation in 18 cities, and the attendance exceeded last year's enrollment of over 3,000. Instructors for the zone schools are given a week of

intensive training. This training took place in Albany, beginning May 11, 1931 with an attendance of 24.

Institute for Fire Chiefs.—In addition to the zone schools and the course for instructors, an institute for fire chiefs was held for the first time, June 9-11, in connection with the annual meeting of the New York State Fire Chiefs' Association and the Mayors' Conference, at Glens Falls. It was recognized that different problems confront the administration and the men in the ranks, hence the following subjects were discussed: organization and administration; fire-alarm systems; equipment; fire prevention and building inspection; ventilation; reducing fire hazards in buildings under construction; modern methods of fighting fire; salvage.

Oklahoma School for Instructors.—In Oklahoma the first of a series of quarterly schools for fire department instructors was held in Oklahoma City. April 20-22; 33 cities were represented by 50 instructors, chiefs and others, as a result of which 919 firemen in these cities will each receive 100 hours of instruction annually until completion of the full course. The school is sponsored by Oklahoma University, Oklahoma Agricultural and Mechanical College, the Oklahoma Municipal League and the State Board of Education, and is under the supervision of the Oklahoma State Firemen's Association.

Other Schools.—Other courses given in June include the Firemen's Short Course of the New Mexico State Firemen's Association, Clovis, June 3-5; the third annual Kansas Fire College, Topeka, June 8-10; the second Fire College of the Florida State Firemen's Association, at Sebring, Fla., June 10-12; the seventh annual Illinois Fire College, University of Illinois. Champaign-Urbana, June 23-26; and the Wisconsin Short Course, University of Wisconsin, Madison, June 23-26. Other states among them West Virginia, Michigan, Montana and Colorado, held schools during the summer.

MUNICIPAL FUNCTIONS

FIRE PREVENTION

Losses.—The business depression was expected to have a very considerable effect on the fire losses throughout the country, but it appears evident that the large increase in incendiary fires has not developed and the fire loss level in general has not increased as rapidly as expected. The increase in losses in 1930 over 1929 amount to approximately nine per cent; 1931 losses ran about the same level. The better control of arson through legislation and investigation procedure and the better inspection by fire departments of business properties has been responsible for the keeping of the losses from mounting rapidly. Twenty-nine states now have the model arson law, which has been effective in clearly defining various degrees of arson and making convictions easier to obtain.

Inspection work through fire prevention bureaus in local fire departments has increased materially. Nearly every city of importance has an organized bureau, and a regular check-up of the common causes of fires is being made. In addition to this general inspection an interesting development of the last year has been the inspection of dwelling houses by the fire department in a number of cities. Dwellings cannot legally be inspected, but voluntary inspections asking permission of owners to enter the building and look for fire hazards have been carried out with great success. Another interesting development has been the more general interest in salvage methods in fire departments. A large number of fire departments are now carrying equipment and maintaining men to minimize incidental losses from smoke and water. The whole fire department atmosphere is gradually changing from the conception of the work of drowning out fires by water to a realization of their responsibility as conservation organizations in minimizing losses.

Regional Conferences.—One of the developments of the year has been the fire prevention regional conferences conducted by a number of

cities. Cities that have conducted successful fire prevention campaigns have invited surrounding community representatives for a general conference so that the whole surrounding territory may improve its fire record.

Educational Work by Radio.—Considerable educational work through the medium of the radio has been undertaken during the past year. This is a very useful field for educating the public in the general economic significance of the fire waste.

Fire Prevention Bureaus.—The formation of fire prevention bureaus in or connected with fire departments in many of our cities is a rather recent movement and one which has shown a marked growth in the past year. It has come to be recognized that modern industries present many special fire hazards which it is incumbent upon the municipality to regulate in order that lives and property may be safeguarded. With trained men forming a fire prevention bureau working under or with the fire chief and with a suitable fire prevention ordinance many cities are ably meeting the problem.

Fire Protection.—From October 4 to 10 communities throughout the nation gave special attention to means of lowering America's gruesome and indefensible record of fire losses. The National Fire Protection Association, 60 Batterymarch St., Boston, prepared various aids for the observances of Fire Protection Week, including a 50-page *Fire Prevention Week Handbook*, a supplement entitled *Facts About Fire* and a collection of photographs of fire prevention exhibits. Posters and films were also available through the Association. Fire protection activities offer an exceptional field for temporary employment that is in every way worth while. The undertaking of a thoroughgoing inspection program, as well as the removal of fire hazards, the replacement of combustible structures by those that are fire-resistant, and the improvements of fire protection facilities, yield big dividends for the future, and mean

V. MUNICIPAL GOVERNMENT

the establishment of procedures, habits and improved construction that will be of lasting benefit to the community.

FIRE DEPARTMENT ADMINISTRATION

Mutual Aid.—An interesting phase in the development of fire department administration in recent years has been the adoption and extension of plans for mutual aid. Some of these plans have been simple, involving perhaps an agreement between two adjacent towns, others have been more complex, calling for inter-municipal response embracing a considerable area and providing for the covering of vacated territories. Mutual aid has been defined as the application of the Golden Rule to the fire service, but it implies more than a willingness on the part of a given community to help its neighbor in distress. It means a definite and prearranged agreement and plan whereby regular response is provided for in event of alarms from certain boxes or locations,—a plan that is practically automatic in its operation and makes possible complete and definite cooperation between the fire departments of the communities entering into the agreement.

BUILDING CONSTRUCTION

Fire Resistance.—The Building Code Committee of the Federal Department of Commerce has contributed to its already available studies a report on "Recommended Minimum Requirements for Fire Resistance in Buildings." This "forms a substantial and authoritative basis for use

wherever revision of building codes is taken up," says Secretary Lamont in the letter of acceptance of the report by the department of Commerce.

Utilizing Unemployment.—The period of stringency in the employment situation afforded an excellent time in which to make improvements in buildings to make them more secure from the dangers of fire. These included such items as the construction of fire walls, the moving of hazards equipment to safe isolated locations, the extension of water systems, automatic sprinkler protection, etc. Such activity was suggested by the National Fire Protection Association, one of whose members, a large industrial corporation, has shown particular concern in having its several plant managers see to it that all possible improvements to bring about increased fire protection, for which recommendations were on file, should be done at the present time of slack employment.

Construction Developments.—Outstanding among the developments in the field of fire prevention during the past year have been the increasing trend toward the adoption by municipalities of laws representative of good and safe practice in building construction, more effective control by municipalities of fire hazards through the formation of fire prevention bureaus and the adoption of suitable fire prevention ordinances, increased activities by fire departments in salvage work, and the development of short courses for firemen at many of our state universities.

MUNICIPAL MISCELLANIES

By CLINTON ROGERS WOODRUFF

HONORARY SECRETARY, NATIONAL MUNICIPAL LEAGUE

MASSACHUSETTS BILLBOARD CASES

Hearings in fifteen billboard cases, involving twenty-three complaints were consolidated into a single pro-

ceeding before the Supreme Court of Massachusetts and referred by it to Frank H. Stewart, as master, to take evidence and report back to the court. The taking of oral testimony

was concluded Aug. 16, 1929. Thereafter the master traveled 1,000 miles with counsel in order to take a view of the boards, and June 2, 1931, he filed his report. Briefly summarized, the master finds, among other things, that the rural billboard is a distraction as well as an obstruction to vision, and therefore a menace to traffic; that in residential neighborhoods such commercial intrusions as signs and billboards are offensive and obnoxious to reasonable persons, and seriously depreciate property values; that such intrusions are damaging to places which are frequented by the public chiefly on account of their beauty or historic interest; that such intrusions are damaging to the public welfare by reason of their damage to the scenery and to the amenity of places and to property values; that the restrictions and regulations framed by the Massachusetts division of highways, acting under the police power of the state, were framed with these considerations in view and are reasonable in themselves; that in so far as aesthetic elements have entered into such restrictions and regulations, they have "a real and economic value to the Commonwealth and to its citizens"; and that such restrictions and regulations may reasonably be applied to existing boards not conforming to the later and more restrictive regulations, although it means that a large proportion of existing boards must be moved. The report states that the stenographic record consists of more than 9,000 pages; that more than 4,200 exhibits were received; that the written and printed requests for special findings of fact numbered more than 1,800; and that he had also considered 650 pages of briefs submitted by counsel. These figures will indicate the thoroughness with which the case has been prosecuted, and will suggest that when the court comes to a consideration of this record, it may feel a natural reluctance to disturb the master's findings of fact.

HANDBILL DISTRIBUTION

Chicago Ordinance Voided.—In the case of *City of Chicago v. Schultz*,

173 N. E. 276, the Illinois Supreme Court adjudged to be void an ordinance forbidding distribution of handbills. The Court held that "there is no express grant of power to a city which enables it to pass an ordinance prohibiting a person from handing out a circular, card, picture, or advertising matter of any description whatsoever, in or upon its public streets or sidewalks. Such power, if implied, must be reasonably exercised. The handing out on a public street, sidewalk, or public place of a 'circular, dodger, handbills, pamphlet, card, picture, or any advertising matter of any kind whatsoever,' is not, of itself, any offense. On the contrary, such practices, as a general rule, are harmless incidents of our everyday life. If this ordinance should be upheld, every person who hands his card or picture to another while on a public street or sidewalk or in a public place within the city of Chicago will be subject to a fine. The ordinance also prohibits the handing out or distribution 'of any advertising matter of any kind whatsoever,' and it would seem that under this broad restriction the distribution of newspapers would also be prohibited, as they all contain advertising matter. Laws which attempt to regulate and restrain our conduct in matters of mere indifference, without any good end in view, are regulations destructive of liberty. Under our Constitution and system of government the object and aim are to leave the individual entirely master of his own conduct, except where the public good requires some direction or restraint."

Milwaukee Ordinance Upheld.—A Wisconsin Court however, took a different view. In the case of *Milwaukee v. Kassen*, 234 N.W. 352, decided by the Wisconsin Supreme Court, January 13, 1931, an ordinance prohibiting the distribution of "any circulars, handbills, cards, posters, dodgers, or other printed or advertising matter," was sustained as being valid. The Court cited a decision of the Nebraska Supreme Court (In *re* Anderson, 96 N.W. 149) pointing to the promotion of public health and

prevention of fires as justifying such ordinances.

ROADSIDE IMPROVEMENT

Roadside surveys have been made in Eastern Long Island, on the highway approaches of Washington, D. C., and in the State of California. With the exception of the Washington, D. C., survey, financed by the American Civic Association, all surveys have been financed largely by the American Nature Association, which has also published illustrated reports of them. A heavy program of work has been carried by the Counsel of this organization, Albert S. Bard, who has assisted groups and states in the drafting of legislative hearings, supplying information on court decisions, etc., etc. He has filled the role of an expert on billboard legislation, at the disposal of all interested groups.

MUNICIPAL LOANS FOR UNEMPLOYMENT

A Michigan statute authorizes home-rule cities to incur three-year loans for the relief of inhabitants "in case of fire, flood or other calamity." Interpreting this provision, the Michigan Supreme Court said in the case of *City of Muskegon Heights v. Danigelis*, 235 N.W. 83: "We hold the term, as employed in the statute, is not limited to distress occasioned by physical forces, but extends to an overwhelming adversity, such as widespread inability to obtain employment and distress occasioned thereby. This construction rightly accords to the members of the Legislature humanitarian intent. . . . The city council deeded 'that the exhaustion of funds for relief of city poor constituted an emergency.' The distress among inhabitants was acute and occasioned by an extraordinary event; want and misery, occasioned by unemployment, was widespread and demanded prompt alleviation. The fund for the relief of the poor was exhausted, and the winter season at hand. The City Council was confronted by a most serious condition existing among inhabitants, as disclosed by the proofs, and there existed an emergency justifying resort

to the extraordinary method for relief of misery authorized by the statute and the city charter."

NEW YORK'S WATER SUPPLY

Justice Holmes of the U. S. Supreme Court rendered a decision in May, which meant more water for New York City and elimination for six hamlets in Delaware County, N. Y. By the court's order New York was allowed to divert 440,000,000 gals. per day from certain tributaries of the Delaware River to add to the city's ever-growing water supply. By the same decree Arena (pop. 216), Dunraven (pop. 104), Union Grove (pop. 204), Shavertown (pop. 219), Pepacton (pop. 27) and possibly Downsville (pop. 532) will be blotted out of existence by a great new reservoir which will rise over them when the East Branch of the Delaware is dammed. The State of New Jersey fought to save its stake in the flow of the Delaware. Seeking an injunction against New York, its attorneys pleaded for a strict application of the common law doctrine of riparian rights forbidding diversion from one watershed to another; but the Supreme Court, in overruling this argument, decreed, in effect, that domestic municipal water supply is the highest and most important use to which interstate water can be put. New York City did not get its new water supply unconditionally. Before it may build dams for diversion it must erect plants at Port Jervis to purify sewage and eliminate industrial waste pouring into the Delaware. Also if the river drops below a specified level at Trenton, New York must release a part of its impounded supply. On the East Branch will be constructed an \$18,700,000 dam from which a tunnel big enough to drive an automobile in will be blasted 22 miles through solid mountain rock to link with the present Catskill system. Another \$7,200,000 reservoir will be made on the Neversink River.

OHIO'S SEWER BONDS

Twenty years ago and over, the Ohio Legislature enacted a Sanitary

Sewer Act enabling the counties of the state to create sanitary engineering departments to construct sewer and water systems in outlying undeveloped areas adjacent to a growing city. In 1921 Cuyahoga County took advantage of the provisions of this act. The department thus established has constructed, since that time, over 300 miles of water mains and over 290 miles of sewers, costing in the neighborhood of \$20,000,000. The work seems to have been done satisfactorily, so the Citizens League of Cleveland reports. Difficulties have arisen, however, in connection with the method of paying for these improvements. Under the law the county advances the money in the form of bonds to meet the cost of the improvements, which is to be later collected as special assessments against the property presumed to have been benefited. The total accumulated delinquencies in these special assessments, have increased until there are now thousands of parcels on which the delinquencies are more than the assessed value of the property. A case involving these special assessment bonds came up to the Ohio Supreme Court, which handed down a decision in February. The Court held that the county is not liable for the payment of these bonds issued in anticipation of the collection of special assessments that have become delinquent, and the county cannot be compelled to make appropriations out of the general fund even to pay the delinquent interest accrued on such bonds. This decision is far-reaching in its effect, and is a blow not only to the county sanitary department, but to all the municipalities that have made similar bond issues a lien on benefited property. The effect was so serious that various public authorities of the state sought a rehearing in the case, which Supreme Court granted and subsequently announced a reversal of its previous decision.

CIVIC PRIDE OFFICER

Detroit has established a new office which is in charge of a "Civic Pride

Officer" created to solve the problem of civic appearance that must be met by every large community. This phase of municipal administration has hitherto been inadequately looked after by various departments—Health, Police, Recreation, and Public Works. The newly established office comes under the Department of Health, and is an idea of Dr. Henry F. Vaughan, Commissioner. Eliminating waste paper from the public streets is the first job being tackled. Green containers have long been provided at required intervals for this purpose, but these have by no means been universally used. The common practice of dropping paper and other small objects is to be discouraged by a campaign of public education. This work will be undertaken in a small way, and will be increased as public opinion justifies. The first active campaign program is directed at the habit of expectoration on the streets. The actual jurisdiction of the office extends only to the public streets of Detroit. Private property and alleys are not included. It is felt, however, that owners of private property will follow the plans laid out by the city. When this stage is reached, the object of the Department will have been achieved. Other methods of general improvement will be sought and adopted. The Department is starting out with the object of finding and using every successful means of cooperating with the public to maintain a cleaner and healthier city.

PUBLIC ADMINISTRATION CLEARING HOUSE

A Public Administration Clearing House has been formally organized in Chicago by the election of former Governor Frank O. Lowden, as Chairman, former Governor Harry F. Byrd of Virginia, as Vice-Chairman, and Richard S. Childs of New York, President of the National Municipal League, as Treasurer. Other members of the Board are Newton D. Baker, Chester H. Rowell, of California, and Louis Brownlow, of Radburn, N. J. The seventh member

V. MUNICIPAL GOVERNMENT

of the Board of Trustees is to be a Canadian. Louis Brownlow, who for the last three years has been engaged in helping to build the model city of Radburn, has been chosen as Director of the Clearing House. For six years he was a Commissioner of the District of Columbia, for three years City Manager of Petersburg, Va., and for three years City Manager of Knoxville, Tenn. He has been President of the International City Managers' Association, and is now Vice-President of the National Municipal League. The Public Administration Clearing House has received a grant of \$50,000 a year for a period of ten years from the Spelman Fund of New York toward the development of its program of work. The chief purpose of the Clearing House will be to act in cooperation with existing organized bodies of public administrators, and municipal research agencies. It will confine its activities to the administration field and will advocate no particular form of governmental organization nor support specific political plans proposed for the remedy of administrative ills. It will not undertake to render technical advisory service to public officials or citizen groups or to make administrative surveys.

AMERICAN MUNICIPAL ASSOCIATION

The American Municipal Association, a federation of some twenty-three state leagues of municipalities, held its 8th annual meeting in Chicago, August 3-4-5. Sedley H. Phinney, New Jersey, was elected president, and A. D. McLarty, Illinois, executive secretary. Final arrangements were made for instituting a joint campaign for national advertising by the Association on behalf of the twenty municipal league magazines. A special meeting of the Executive Committee was held in Chicago, May 23-26, for the purpose of considering plans for reorganizing the association and improving the state league magazines. The secretaries of twenty-two state leagues were represented at the meeting,

which included fifteen state league magazines, five of which are privately owned, the remainder being property of the respective organizations. The meeting was made possible through the generosity of the trustees of the Spelman Fund of New York, who paid the transportation expenses of the participants. The Spelman Fund is a corporation formed for charitable, scientific and educational purposes, and a wide latitude is given to the trustees for application of the fund's resources to various public purposes. The trustees have manifested great interest in the improvement of municipal government and recently contributed to the aid of the International City Managers' Association, and several state leagues of municipalities. The plan involves the establishment of a permanent secretariat which will be located on the grounds of the University of Chicago. It contemplates considerable financial aid from the Spelman Fund.

TRAINING OF MUNICIPAL OFFICIALS

The New York State Conference of Mayors has received a grant of \$52,500 from the Spelman Fund of New York City, to be used in promoting the training of municipal officials and in the study of state-wide practical problems of municipal administration, to be applied over a period of six years for the establishing of training schools for municipal officials and in demonstrating the value of technical instruction and guidance of officials already in office. A special bureau has accordingly been established in connection with the Conference of Mayors under the direction of Albert H. Hall, formerly Director of the Schenectady Municipal Research Bureau. These schools will be in the nature of institutes and round table discussions of the practical problems facing city officials. Studies of special problems in governmental administration will be made and published, and the results of the investigations will be made available to all municipal officials.

CITY PLANNING

CITY PLANNING

By FLAVEL SHURTLIFF

SECRETARY, NATIONAL CONFERENCE ON CITY PLANNING

CITY AND REGIONAL PLANS

New York.—Regional planning should be cited as the most notable planning activity of 1931. The completion of the tenth and last volume of the New York Regional Plan gave New York and the surrounding country in the metropolitan area a sound, scientific and forward-looking plan, and gave the world an encyclopedia of planning information. This greatest planning achievement, involving an expense of \$1,250,000 and ten years' labor, was the gift to the people of the region of the Russell Sage Foundation. It has been most enthusiastically accepted and promised support by the governors of the states of New York, New Jersey and Connecticut, all of which are affected by the recommendations of the Plan.

Philadelphia.—During the same month the completion of the plan for the Philadelphia Tri-State Region was announced, after almost four years of study and at an expense of \$600,000 contributed by public subscription. Both the New York and Philadelphia work will be continued by educational organizations whose objective will be to make the regional plan a reality.

Chicago and Los Angeles entered their tenth year of regional planning activity. Their work may not be as dramatic as that of New York and Philadelphia, but it is equally constructive and stimulating. The people of Greater Chicago and Greater Los Angeles are keenly alive to the value of local and regional planning.

County Planning.—Special mention goes to Mercer County (Trenton), New Jersey, for the completion of an excellent county plan, and to Monroe County, New York, for a highway plan which has been officially accepted by the governing bodies of the nineteen townships which, with the city of Rochester, make up the entire county.

State-Wide Planning.—The state of Wisconsin which, in 1929, by legislative act created a Director of Regional Planning, in 1931 went a step further by creating a state-wide Regional Planning Committee. The state of Iowa began a two year survey to develop a twenty-five year recreation plan. City planners prophesy that there will be a trend to state planning.

CITY PLANNING AND ZONING

Ordinances.—Although the returns are not all in for 1931, there is strong evidence that planning and zoning are regarded as essential municipal activities. In spite of the business depression and of rigorous municipal economy, about the same number of new or revised zoning ordinances were enacted, and about the same number of new planning commissions were created. On Oct. 1, 1931, there were well over 1,000 zoning ordinances in operation in American municipalities representing a population of more than 46,000,000. There was a record, too, of more than 800 city planning commissions as against about 750 for the corresponding period in 1930. Notable city planning reports for 1931 were: Vancouver, B. C.; Jacksonville, Fla.; Oklahoma City, Okla.; Cedar Rapids, Ia.; Bayonne, N. J.; Yonkers, N. Y.

Legislation.—In the field of legislation, Vermont passed a zoning act, the last of the forty-eight states to give legislative sanction to the zoning principle, and Michigan enacted a planning law closely following the standard act prepared by the Federal Department of Commerce under Secretary Hoover's administration. The latter accomplishment is the direct result of the work of the youngest of state planning conferences, the Michigan Conference, which this year celebrated its first birthday.

V. MUNICIPAL GOVERNMENT

St. Paul Program.—Long term budgets for financing major physical improvements have for five years been prominent among planning recommendations. Their value was most convincingly illustrated by the experience of St. Paul, Minn., which is now in its fourth year of a five-year program. Mayor Gerhard Bundlie said at the Twenty-third National Conference on City Planning: "The benefit which we have derived from the program formulated in 1928 and which is now being rapidly carried out lies in this, that we have decreased unemployment and kept almost normal the business conditions for St. Paul. Moreover, private enterprise has been encouraged. The records will disclose that there has been a greater measure of private construction work in St. Paul during the past two years than in any other years of its history."

PUBLICATIONS

President Hoover's Conference on Home Building and Home Ownership in December resulted in many reports of value in the city planning field. These will probably be avail-

able in volumes of the *Proceedings of the Conference*.

Two excellent studies continued the research program of the Harvard University School of City Planning,—*"Land Uses For Various Purposes By Urban Populations: Determination of Percentages of Land Use As an Aid to Scientific Zoning Practice,"* directed by Harland Bartholomew and,—*"The Influence of Parkways on Land Values and Social Values,"* directed by John Nolen.

Principles of City Planning by Karl Lohmann, Professor of City Planning of the University of Illinois is a needed review bringing the whole subject up to the year 1931. Although intended primarily for the class room, it has interest for members of planning commissions and for the general public.

Zoning in the United States, edited by W. L. Pollard is a collection of thirty-two articles on various aspects of zoning. The volume is another fine contribution to the subject of planning and zoning by the American Academy of Political and Social Science.

ZONING

By H. M. OLMSTED

ASSOCIATE EDITOR, *The American City*

SPREAD OF ZONING LEGISLATION

Zoned cities in the United States continued to increase in number in 1931, while new and old legal, administrative, and in the broad sense, political, problems concerned with this method of social control over the use of privately owned real estate were being encountered and threshed out. Vermont adopted a zoning law, the 48th state to do so; zoning legislation is now on the statute books of all the states, and of the District of Columbia. At the beginning of 1931, zoning ordinances were in effect in 981 municipalities in this country, representing more than 46,000,000

people, or more than 67 per cent of the urban population of the United States, according to the Department of Commerce. Early in December, 1931, it was stated at the President's Conference on Home Building and Home Ownership that there were then over one thousand zoned municipalities.

POWERS OF ADJUSTMENT AGENCIES

Decision in Illinois Case.—Zoning boards of appeals or adjustment, the familiar means by which exceptions or variances from the strict operation of zoning ordinances can be granted where deemed justifiable, re-

ceived special notice during the year. Although a device which, by alleviating special hardships, tends toward greater conservativeness in zoning and hence is a supposed bulwark against unfavorable judicial opinion, boards of appeals received a serious setback from the Supreme Court of Illinois in the case of *Welton v. Hamilton* (176 N. E. 333) decided April 23, 1931. The court held that the power of the boards to grant variances constituted an invalid delegation of power. The decision, however, turns upon the fact that no rules or standards for the guidance of the board in question, other than its own uncontrolled discretion, had been provided. It is also interesting to note that the board's act which precipitated the litigation was the apparently arbitrary grant of a variance without explanation other than that it permitted more profitable use of the land involved. This decision, while it may be a regrettable precedent for some other jurisdictions, is not an attack on the general principle of zoning; and it should serve as a useful warning to cause rules and standards to be provided in zoning statutes or ordinances, and to further the use of caution and wisdom by existing boards. The very ordinance which entered into the above case has since been amended both to provide specific guidance to the board and make its recommended variances effective only by passage of amending ordinances.

The Board of Standards and Appeals in New York received unfavorable publicity in 1931, in addition to that noted in *THE AMERICAN YEAR BOOK* for 1930, because of disclosures that were made of its particularly successful activity in connection with practitioners closely allied to the dominant political machine. It was also the subject of a court decision of some general interest, in *People ex rel. St. Albans-Springfield Corporation v. Connell* (177 N. E. 313). The New York State Court of Appeals decided that the trial court had the power to review not only the jurisdiction but also the decision of the Board, and approved the lower

court's action in granting, temporarily, a variance that the Board had denied. The Court of Appeals stated, however, that the Board's judgment should be final unless it clearly appears to be arbitrary or contrary to the law, and that the courts must not trespass upon the administrative work of the Board, but must confine their review to correcting legal errors.

Regulation of Land Uses.—The extent of the police power over the regulation of land uses through zoning ordinances was liberally construed by the United States Circuit Court of Appeals in the case of *Marblehead Land Co. and Standard Oil Co. of California v. City of Los Angeles*, reported in the *United States Daily*, March 11-14, 1931, where a prohibition against oil-well drilling in a prospective residential district was sustained, partly on the ground of protection for adjacent property and also on the theory that the city, in the exercise of the police power, could regulate its future growth and development.

ZONING PURPOSES AND SHORTCOMINGS

The social purposes of zoning and the shortcomings of present zoning practice, were given timely and vigorous expression by Harland Bartholomew in his presidential address before the National Conference on City Planning, in June:

"Our zoning has over-emphasized the protection of certain better type residential districts and either ignores or seldom effectively controls the distribution of population in accordance with reasonable standards. In apartment house areas we permit ten times the density of population of one- and two-family districts, or even ignore the density regulation entirely; and this despite the fact that population density regulation is the only scientific basis for planning sewers, water, schools, and various sorts of public utility services.

"Most of our zoning plans are all out of scale, having erred usually on the side of providing for unlimited growth of apartment houses and of

V. MUNICIPAL GOVERNMENT

business often far beyond any reasonable or possible degree of growth. In this, of course, we see the subordination of effective city planning to the desires of real estate speculation. There is ample room for legitimate real estate investment under a properly drawn city plan, but there can be no sound city planning which is based upon the unlimited and usually whimsical desires of real estate speculation."

PUBLICATIONS

Early in the year there appeared a report of a Committee on Airport Zoning, appointed by the United States Department of Commerce, which showed the various legal methods by which, with due consideration to neighboring land-owners, airports

may be protected against obstacles to aviators and other disadvantages.

Other publications of interest in connection with zoning, and appearing during 1931 or late in 1930, include: *The Law of Zoning*, by James Metzenbaum, published by Baker, Voorhis & Co., New York (1930), a historical and descriptive book of 569 pages; *The Preparation of Zoning Ordinances*, published by the United States Department of Commerce; "Zoning in the United States," a symposium constituting Part 2 of the *Annals of the American Academy of Political and Social Science* for May, 1931; and the annual publications of the Department of Commerce, entitled "Zoned Municipalities in the United States" and "Survey of Zoning Laws and Ordinances Adopted during 1930."

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

(For further information, the reader may address the following organizations)

AMERICAN CIVIC ASSN., Union Trust Bldg., Washington, D. C.

AMERICAN LEGISLATORS' ASSN., Equitable Bldg., Denver, Colo.

AMERICAN MUNICIPAL ASSN., Lawrence, Kan.

AMERICAN SOCIETY OF MUNICIPAL ENGINEERS, 3817 Olive Street, St. Louis, Mo.

GOVERNMENTAL RESEARCH ASSN., 261 Broadway, New York City.

INTERNATIONAL CITY MANAGERS'

ASSN., 923 East 60th Street, Chicago, Ill.

NATIONAL ASSN. OF CIVIC SECRETARIES, Ridge Bldg., Kansas City, Mo.

NATIONAL CIVIL SERVICE REFORM LEAGUE, 521 Fifth Ave., New York City.

NATIONAL INSTITUTE OF PUBLIC ADMINISTRATION, 261 Broadway, New York City.

NATIONAL MUNICIPAL LEAGUE, 261 Broadway, New York City.

DIVISION VI

TERRITORIES AND SPHERES OF INFLUENCE

ALASKA AND HAWAII

BY WILLIAM ATHERTON DUPUY

EXECUTIVE ASSISTANT TO THE SECRETARY OF THE INTERIOR

ALASKA

Gold.—The Governor of Alaska reports that the Alaskan production of gold increased approximately \$1,500,000 for the past year. The total gold output from all sources is estimated to be \$8,476,000 as compared to \$7,761,000 in 1929, and of this amount \$4,837,000 or 57 per cent, was derived from placers.

Copper.—Copper minerals are widely distributed in many sections of the Territory, but mining of these ores has been confined to two districts,—the Kennecott mines in the Copper River region and the Latouche properties in Prince William Sound. The sharp decline in the price of copper caused a curtailment in operations in both districts. The mines at Latouche were closed and the annual production of the Kennecott mines was materially reduced. The copper recovered from all sources is estimated to be 32,651,000 pounds, valued at \$4,244,600. In 1929 the production of 40,510,000 pounds was valued at \$7,130,000. Unless there is an improvement in market conditions and an increase in the price of copper, a further reduction in the output of this metal during the coming year may be anticipated.

Fisheries.—The total value of the output of the Alaska fisheries in 1930, exclusive of aquatic furs, was \$37,679,049, as compared with \$50,795,819 for the previous year. On the basis of the number of salmon caught there was an increase of 15 per cent over the take in 1929.

Whaling.—The whaling industry maintained an average production, but the value of the output was approximately 7 per cent less than in 1929. Two whaling stations were operated and a fleet of 7 steam vessels were used in the capture of 355 whales; 206 persons were employed in the manufacture of 816,700 gallons of whale oil valued at \$371,276; 121,150 gallons of sperm oil valued at \$45,431; 1,170 tons of fertilizer valued at \$51,400; 37,000 pounds pickled meat valued at \$1,850; and 5,600 pounds of whale bone valued at \$308. The total value of these products is \$470,265 as compared with \$502,081 in 1929.

Seal Herd.—When the control of the Alaskan seal herd passed to the United States Government the herd numbered approximately 132,000 animals and in 1930, 20 years later, there were 1,045,101 seals of all classes on the islands. The rehabilitation of the seal herds is an outstanding achievement and demonstrates the results that may be derived under proper methods of control and utilization of the surplus. In 1930, 42,500 skins were taken from the rookeries on St. Paul and St. George Islands. This is the largest take since the Government assumed control. During the year 41,516 skins were sold at public auction for a gross price of \$821,767.

Reindeer were introduced into Alaska about 40 years ago as a relief measure to provide food and clothing for the native people. The original herds contained less than

VI. TERRITORIES AND SPHERES OF INFLUENCE

1,500 deer. From this small herd the entire western part of Alaska has been supplied and it is estimated that there are several hundred thousand animals in the herds that are distributed from Point Barrow to Atka Island and in the Yukon Valley. There are a few places where the natives are not supplied with deer, but the Government owns between ten and twelve thousand animals and these will be used to supply new herds as rapidly as possible.

Education.—There are many communities in the Territory without school facilities where there are a number of native children. Accurate information concerning these villages had not been available and it was realized that before this condition could be corrected a survey must be made of the situation. This was undertaken during the past year and the data is available. There are 25 villages with a school population of more than 25 children each which are without schools. There are many other communities where 10 or more children reside under similar conditions. It is realized that it is not possible to provide new schools in all of these places in one year, but a definite program should be adopted which will assure the construction of 10 buildings each year until every community has been supplied. Twelve new schools were authorized last year, and to insure uniformity in construction of buildings for Alaskan conditions, an architect was employed to prepare the plans and supervise the work. The results thus far amply justify the additional personnel.

Population.—Heaviest of the responsibilities of the Department of the Interior in Alaska has been that for the health and education of the native population. There are 12,000 Eskimo American citizens scattered along Bering Sea and the Arctic. The Aleuts, who are part Eskimo, part Indian, and Part Russian, live at great a distance west of San Francisco as San Francisco is west of New York. Far into the interior, where reach the Yukon, the Porcupine, and the Koyuku Rivers, live the Atha-

bascans, most isolated of all human beings on this Continent. It is probable that there are groups of Americans at these headwaters who have never been seen by white men and who do not know that a world beyond exists. Down that fringe of Alaska that reaches farthest south, where the climate is warmer, are to be found the Thlingets, the Hydats, and the Metlakatlangs, not unlike the Indians of the Northwestern States. In villages that range in population from 30 to 400 these people live, each village largely a unit unto itself.

Social Aspect.—Already many Eskimos have replaced their igloo homes, which were dirty and insanitary, with houses built largely under the direction of American school teachers. They are coming to live as do civilized people. The young Eskimos all speak English and read and write. They have been taught ventilation and personal cleanliness. In the Alaskan native community the school is the center of all activity, social, industrial, and civic. The teacher is guide, leader, and much else the community may demand. Responsibility for the health and education of these natives, on which \$1,200,000 was spent in 1930, rested with the Office of Education until 1931. It was then transferred to the Indian Service as an administrative agency better fitted to carry on this work.

Railroad.—The Government operates and every year loses money on a railroad in Alaska, running from Seward, on the coast, 470 miles to Fairbanks. It was largely in the hope of developing activities along this railroad that would give it sufficient freight to make it pay that Congress, in 1931, appropriated \$250,000 for continuation of the investigation of the mineral resources of Alaska. Geological Survey parties, working in Alaska, may provide information as valuable as was that of Schrader at Nome a third of a century ago, and possibly it will be as unwisely disregarded.

Administration.—The present policy of the department is to thrust

ALASKA AND HAWAII

as much of the government of Alaska as possible back to Alaska. Looking to that end, the President has appointed three Alaskan commissioners, resident in the Territory, and has placed much responsibility on them. These commissioners represent departments of the Federal Government in Washington, and each has charge of important elements of administration in Alaska. They are George Parks, Governor of Alaska, representing the Department of the Interior; Dennis Winn, representative of the Department of Commerce, having charge of fishing problems in Alaska; and Charles H. Flory, representing the Department of Agriculture, and having charge of farm, stock, and forestry problems in Alaska. Each of these commissioners has long been a resident of Alaska. Each retains his post as representative of his department and adds to it the duties of commissioner. It will be their business to settle in Alaska many matters that have hitherto come to Washington for determination.

HAWAII

Government.—A governor appointed by the President, a Delegate to Congress elected by the people, sitting in the House of Representatives but without a vote, and a legislature of 15 senators and 30 representatives constitute the government of Hawaii. The governor

reports to the Department of the Interior, which is Hawaii's link to the United States Government. He is appointed by the President, but a well recommended Hawaiian citizen is always chosen. His appointment is the only point at which the Territory of Hawaii is not self governing.

Exports.—Hawaii, under territorial government, continues to prosper, according to the latest reports of its Governor to the Department of the Interior in Washington. The two main crops, sugar and pineapples, have shown an increase in production, but, due to lower prices, the value of the exports of these two commodities has decreased. Hawaii's exports to the mainland of the United States and to foreign countries were nearly \$10,000,000 more than her imports.

Internal Revenue.—Hawaii again leads many of the states in internal revenue payments to the Federal Treasury.

Population.—The Federal census figures released March 16, 1931, gave Hawaii's population in 1930 as 368,336, an increase of 44 per cent over 1920. Of the total population in 1930, 81.4 per cent were native born, as compared to 65.9 per cent in 1920. Those classed as aliens, that is, those foreign born who had neither become naturalized nor taken out their first papers, amounted to 16.9 per cent of the entire population as against 32 per cent in 1920.

HAWAIIAN BIRTH CERTIFICATES

	Chinese		Part Chinese		Japanese		Part Japanese		All others		Total		Grand total
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
Certificates granted:													
Fiscal year.....	160	151	4	1	626	484	2	5	52	54	844	695	1,539
Previously.....	3,100	1,249	84	41	12,095	3,760	24	11	345	255	15,648	5,316	20,964
Total issued...	3,260	1,400	88	42	12,721	4,244	26	16	397	309	16,492	6,011	22,503
Certificates denied:													
Fiscal year.....	2	1	.....	.....	10	.....	.....	.....	.....	.....	12	1	13
Previously.....	60	10	2	.....	502	110	.....	.....	13	6	577	126	703
Total denied...	62	11	2	.....	512	110	.....	.....	13	6	589	127	716

Decision pending in 514 cases.

VI. TERRITORIES AND SPHERES OF INFLUENCE

Sugar.—The production of raw sugar continues to be Hawaii's main industry. For the sugar year ended Sept. 30, 1930, Hawaiian plantations produced 924,463 tons. The approximate acreage planted to produce sugar cane is 240,000 acres. The acreage harvested to produce the above crop amounted to approximately 130,000 acres. The values of sugar exported from the Territory to the mainland of the United States and foreign countries, during the calendar year 1930, was \$55,233,469. Employed in the sugar industry are 56,411 persons, of whom 2,743 are on a monthly basis and 53,668 are not on a monthly basis.

Pineapples.—The members of the

Association of Hawaiian Pineapple Cannery packed a total of 12,672,000 cases of pineapples, which is 30 per cent more than the largest pack in any previous year. In spite of the fact that this large increase came in a year of depression, the sales have been satisfactory although they have given much concern to the organization. The 11 canneries and the American Can Company which manufacture all the cans used in the Hawaiian pineapple industry, are members of the Association of Hawaiian Pineapple Cannery, and maintain an experiment station as an adjunct to the University of Hawaii. The budget of the station is approximately \$175,000 annually.

PORTO RICO

BY FRANCIS LEJAU PARKER

BRIGADIER GENERAL U. S. A.; CHIEF, BUREAU OF INSULAR AFFAIRS,
WAR DEPARTMENT

GOVERNMENT

Executive.—Porto Rico has a status differing from that of those territories which have been incorporated into the Union. The present governmental system is prescribed by Act of Congress of March 2, 1917, frequently referred to as the Organic Act of Porto Rico. An Executive order of March 21, 1917, issued under authority contained in that act, and of a previous act of Congress of July 1, 1902, placed in the jurisdiction of the War Department "all matters pertaining to the Government of Porto Rico, except as otherwise provided by law" and assigned to the Bureau of Insular Affairs of the War Department the business of that Department pertaining to civil government in Porto Rico. The executive power is vested in the Governor appointed by the President who is empowered to designate the head of one of the insular executive departments as Acting Governor when necessary. The heads of the several executive departments (termed "Commissioners") operate under the general su-

pervision of the Governor and, collectively, form the Executive Council. The Attorney General and the Commissioner of Education are appointed by the President, who also appoints the members of the Supreme Court, the district judge, district attorney and marshal of the District Court for Porto Rico, and the Auditor. The island has a Resident Commissioner to the United States, chosen by popular election.

Legislative.—The Legislature consists of a Senate and House of Representatives chosen by popular election, and, subject to certain limitations such as the veto function of the Governor and the authority reserved by Congress to annul insular legislation, possesses general legislative authority in "all matters of a legislative character not locally inapplicable."

Judicial.—The judicial system includes, in addition to subordinate courts, both the Supreme Court of Porto Rico and the District Court of the United States for Porto Rico. The latter Court has jurisdiction of cases cognizable in the district courts.

PORTO RICO

of the United States and certain prescribed additional jurisdiction, including naturalization of aliens and Porto Ricans. Provision is made for appeals, in certain cases, from judgments of the Supreme Court and of the District Court to appropriate higher Courts, including the U. S. Supreme Court. Except as otherwise provided, the statutory laws of the United States not locally inapplicable are in effect. Important among the exceptions are various provisions whereby Porto Rico is relieved from contributions to the U. S. Treasury, which would otherwise accrue under the various Federal revenue laws.

GENERAL CONDITIONS

Gov. Roosevelt's Annual Report.—In his annual report for the year ended June 30, 1931, Governor Roosevelt states: "So far as general conditions go, they are better. That does not mean, however, that by any stretch of the imagination they can be called good. They are not good but very bad and need attention and

aid or we will soon slip back to where we were. For example, though the statistics indicate that from the health standard we have improved, this improvement does not mean that we even approximate conditions in the continental United States. The same will hold true economically, in education, etc. Though unemployment has decreased, we still show a greater proportion of people without work than is the case on the continent."

Hurricane Relief.—The consequences of the 1928 hurricane will naturally be felt for some time to come. Much was accomplished in connection with hurricane relief and rehabilitation work by the Porto Rican Hurricane Relief Commission, which expended \$3,180,444 during the year for that purpose.

ECONOMIC CONDITIONS

External Trade.—The following table shows the movement of external trade by values:

	Year Ending June 30:		
	1900	1930	1931
Imports from U. S.	\$ 6,952,114	\$ 73,078,779	\$ 68,018,167
Exports to U. S.	3,350,577	95,087,640	94,876,997
Imports from foreign countries.....	3,037,391	10,843,050	9,319,243
Exports to foreign countries.....	3,261,922	4,559,018	3,609,837
Total.....	16,602,004	183,568,487	175,824,244

The above figures show a favorable trade balance of \$12,149,424 in 1931. The total trade with the United States and foreign countries for the year ended June 30, 1931, decreased about 4.2 per cent from the previous year, the greater part representing a falling off in imports. Trade with the continental United States represented about 93.1 per cent of the total external trade. Coffee shipments increased about 356 per cent. This growth suggests encouraging progress toward the rehabilitation of part of the industry. Sugar and tobacco also registered substantial increases in exterior shipments over 1930.

Labor.—Unemployment has somewhat decreased. The Congressional appropriation of \$1,000,000 to be used by the Porto Rican Hurricane Relief Commission for road work helped in the unemployment problem. Up to June 30, 1931, the expenditures from this appropriation had amounted to \$629,918.26. Governor Roosevelt states: "Coming at this time, it has been a Godsend, for it has allowed us to spend in health units, rural schools, etc., money that would otherwise have had to be spent for road maintenance. It has helped in our unemployment problem. With the completion of our program at the end of this coming year, we will have

VI. TERRITORIES AND SPHERES OF INFLUENCE

almost finished asphaltting all our Insular roads."

Under the Organic Act of Porto Rico, approved March 2, 1917, the Bureau of Labor was a part of the Department of Agriculture and Labor. On February 18, 1931, Congress amended this act by authorizing a separate Department of Labor. It began to function July 1.

Agriculture.—Special effort has been devoted to the development of small farms. Crop diversification and truck farming have had particular attention. Improvements in farming methods have been encouraged through farm bureaus. Cooperative associations and government markets have been organized and free seeds distributed. A good beginning has been made in the building up of a market in the United States for fresh vegetables. The Homestead Commission is one of the agencies employed in connection with plans for the development of small farms. Certain of the forestry laws of the Federal Government have been extended to Porto Rico and reforestation has been otherwise encouraged through favorable tax legislation and extensive distribution of seedlings.

Industries.—Among exports from the Island, manufactured products showed an increase. Needlework has made notable strides. During the last year there were established one hat factory, six canning factories, two needlework factories with many branches, five confectionery factories, one novelty factory, and one fishing company.

GOVERNMENT FINANCES

The General Fund commonly termed "Insular Revenues" represents the collection of taxes and other receivables, which are available for current operations of the Government. On June 30, 1931, the cash on hand in the General Fund was \$553,026.85, while there were other current assets of \$204,604.08. Outstanding against this were appropriation liabilities of \$553,661.72, leaving an excess of total current assets over appropriation liabilities of \$203,969.21. The bonded indebtedness of the Gov-

ernment amounted to \$29,097,000 on June 30, 1931, as compared with \$25,353,000 on June 30, 1930. During the same period, the sinking fund for redemption of bonds decreased by \$114,633.91, making a net increase in the bonded indebtedness of \$3,858,633.91. Out of 77 municipalities, 71 showed deficits in operation.

PUBLIC WORKS

Buildings.—Among the structures completed during the year were the new penitentiary at Rio Piedras, the School of Arts and Trades at the University, the High School at Fajardo, and the reconstruction of the Historical Archives Building. Construction on only a few new buildings was started, the most important being the Science Building for the University at Rio Piedras, the Insular Telegraph Building at Aguadilla, and several new cottages for tubercular patients at the Insular Sanatorium.

Roads and Bridges.—Insular funds amounting to \$413,438.02 were spent for the regular maintenance of roads and bridges. The appropriation for road maintenance was cut down this year, so that the work was restricted to repairs of most urgent character. In the repair of bridges, culverts and other appurtenances of the roads, \$19,591.66 was spent. The Congressional appropriation of an additional \$1,000,000, made available to the Porto Rican Hurricane Relief Commission for road work, will enable the government to complete its program for asphaltting. Because of the fact that it costs less to maintain an asphalted road than it does to maintain a macadam road, the Governor estimates that the Insular Government will thus be saved an annual maintenance charge of approximately \$350,000.

EDUCATION

The total enrollment in the public schools for the year 1930-31 was 226,215. There were 37 private schools accredited by the Department of Education with an enrollment of 6,994 children and 303 teachers, and, in addition, 45 private

THE PHILIPPINE ISLANDS

schools, not so accredited, with an enrollment of 2,933 children and 100 teachers. There are 3,786 schools in operation in Porto Rico, 2,028 of which can be classed as rural. The total expenditures for educational purposes from all sources was \$5,554,543.96. For the last three years an average of 36.5 per cent of the annual Insular revenues was devoted to education. Porto Rico receives approximately \$120,000 annually through the extension to the island of the Federal Smith-Hughes Vocational Training Act. This amount is matched by the Insular Government and is devoted to vocational training along such lines as agriculture, home economics, trades, and industries.

HEALTH CONDITIONS

The statistical statement included in the Governor's report shows very satisfactory progress in health conditions. During the calendar year 1930 the annual death rate fell to 18.6. This is a pronounced reduction from the average for the five-year period

preceding the hurricane (which was 21.9) and is the lowest for any calendar year in the history of the Island. Improvement is particularly noticeable in the infant mortality rate, which was 126 as compared with 133 per 1,000 for the previous year. Milk stations are regarded by the Governor as an important factor in the decrease of infant mortality. Due to economic conditions in the United States, it was not practicable this year to raise the amount of funds planned for the five-year program for the rehabilitation of the Island. However, funds contributed from the continental United States, supplemented by aid supplied by the Insular Department of Health and the several localities, sufficed for the opening and maintenance of 93 milk stations during the year and the daily supply of milk to an average of 1,100 children under two years of age. Statistical data for the year indicate substantial decreases in the prevalence of malaria and tuberculosis.

THE PHILIPPINE ISLANDS

BY FRANCIS LEJAU PARKER

BRIGADIER GENERAL U. S. A.; CHIEF, BUREAU OF INSULAR AFFAIRS,
WAR DEPARTMENT

GOVERNMENT

Status.—The U. S. Supreme Court has held that the Philippines were not territory "which had been incorporated in the Union or become a part of the United States, as distinguished from merely belonging to it". The same tribunal, while emphasizing, in general, that the Constitution of the United States is in force in the Philippine Islands, has declared that "The Constitution, however, contains grants of power, and limitations which in the nature of things are not always and everywhere applicable" and has applied that principle in certain matters affecting territories not incorporated into the Union. The present governmental

system is prescribed by the Act of Congress of Aug. 22, 1916, frequently referred to as the Organic Act of the Philippine Islands. An executive order of Sept. 19, 1916, placed in the jurisdiction of the War Department "all matters pertaining to the Government of the Philippine Islands, except as otherwise provided by law" and assigned to the Bureau of Insular Affairs the business of that Department pertaining to civil government in the Philippine Islands.

Executive.—The executive branch of the Government is headed by the Governor General who has supervision and control over all executive functions and, in general, appoints (by and with the consent of the

Philippine Senate) the heads of executive departments and other officials. The Governor General and the Vice Governor (who is *ex-officio* head of the Department of Public Instruction) are appointed by the President, as are also the members of the Supreme Court of the Philippines, the Auditor and Deputy Auditor. There are two Resident Commissioners to the United States.

Legislative.—The legislature consists of a Senate and House of Representatives, the members of which are, in general, chosen by popular election, a few members representing special districts being appointed by the Governor General. The Organic Act provides that trade relations between the islands and the United States shall be governed exclusively by laws of Congress and that acts of the Philippine Legislature in certain other specified matters (the tariff, immigration, lands of the public domain, timber, mining, currency and coinage) shall not become law until approved by the President of the United States. Subject to these limitations, to the veto function of the Governor General, and to the authority of Congress to annul legislation, the Philippine Legislature has been granted general legislative power.

Judicial.—The highest judicial authority is the Supreme Court of the Philippine Islands, which has original jurisdiction in certain cases and general appellate jurisdiction as regards the decisions of the subordinate courts. Its judgments are, in certain cases, subject to review by the U. S. Supreme Court. The statutory laws of the United States do not apply to the Philippine Islands except when they specifically so provide, or it is so provided in the Organic Act.

LEGISLATION

The third and final session of the eighth legislature began July 16 and ended Nov. 8, 1930. A total of 211 measures were passed in this session. Of these, 63 were disapproved by the Governor General. Among the important bills approved was one authorizing an increase in the total

membership of the Supreme Court from 9 to 15 with a view to relieving congestion. Another was a special appropriation of \$100,000 for a study of tuberculosis. The legislature also completely revised the Penal Code, many provisions of which dated back to Spanish times and were out of date. Provision was made for the temporary conduct under governmental management of nine radio stations which had formerly been operated by a private corporation. An act of the legislature which the Governor General believed would go far toward removing the necessity for numerous future vetoes was one creating a legislative service office to furnish technical assistance to the legislature. Provision was also made for the employment, by the legislature, of experts to assist in the general revision of the tax and tariff laws. For the first time in a long period of years, all judicial appointments were confirmed by the Senate, as were nearly all appointments to other offices.

ADMINISTRATIVE INVESTIGATIONS

The year was marked by special efforts to improve the standards of administration through appropriate action in cases of officials shown to be inefficient or guilty of irregularities in office. Among the results of investigations conducted and facts developed, two provincial governors were removed from office and changes occurred in the directorship of two bureaus of the government.

FINANCIAL AND ECONOMIC CONDITIONS

The financial affairs of the government reflect a fairly sound situation. The effects of the general depression are shown in the decrease of revenues from ordinary sources to \$40,819,405.02, as against \$43,635,288.18 for the previous year. Further decreases are anticipated for the following years, but government financing is being planned with that probability in view. The unappropriated cash surplus at the end of the year 1930 was \$6,366,610.37. The

bonded indebtedness of the Insular, provincial and municipal governments amounted to \$86,293,500, against which sinking funds amounting to about \$25,825,000 had been set up. The bonded debt shows a net decrease of \$2,525,000 from the preceding year but is well within the limit provided by law. The government-owned business enterprises showed satisfactory balance sheets.

PUBLIC LANDS

The public land title situation, one of the most serious problems which confronts the government, showed improvement during the year. The number of applications for public lands which were pending at the close of the year was reduced by more than 25 per cent and the number which were acted upon was increased by 60 per cent. Particularly encouraging was the fact that for the first time in years the number of homestead entries allowed exceeded the number of applications. Encouraging progress was also reported in the matter of cadastral surveys.

AGRICULTURE

It is estimated that the total area under cultivation for crops of all kinds in the islands amounts to 9,284,856 acres, or 65 per cent greater than that under cultivation twenty years ago. The greatest increase in acreage has been in rice, none of which product is shipped to the United States. It has been demonstrated that pineapples can be grown in Mindanao and a large packing plant has been established in the Province of Bukidnon.

TRADE

External.—The total external trade for 1930 was \$256,000,000, of which \$133,000,000 represented shipments from the islands and \$123,000,000 shipments entering the islands. The corresponding total figure for the preceding year was \$311,600,000. The decrease was due to lower prices for the principal exports rather than to smaller volume of shipments. Particularly fortunate was the production of a rice crop

which was unusually large and practically sufficient for home consumption. Great damage was done to coconut trees by the leaf miner insect. The production of copra was somewhat less than the previous year and prices received were exceptionally low.

Trade Balance.—The total trade with the United States amounted to \$183,525,090. A notable feature of the 1930 external trade was that while with the United States there was a largely increased favorable balance for the islands, there was a largely increased unfavorable balance in the islands' trade with other countries. An outstanding example of this unfavorable balance of trade was with Japan. In 1930 the Japanese shipments to the islands registered an increase of about 8 per cent in value, while Japanese purchases from the islands showed a falling off of about 40 per cent in value. With the exception of silk and its manufactures and vegetable products and their manufactures, the United States occupied first place in the value of goods shipped into the islands; and with the exception of knotted hemp (abaca) and copra meal or cake, the United States occupied first place in the purchase of Philippine products. In former years the United States ranked first in supplying silk and its manufactures, but in 1930 Japan furnished 54 per cent of the silk imports while the United States furnished only 24 per cent. The percentage of cotton goods purchased from the United States decreased by approximately 12 per cent, while Japan registered a large increase in the percentage of cotton goods sold to the islands.

EDUCATION

There were 1,212,946 pupils enrolled in the public schools, an increase of approximately 50,000 over last year's figures. The percentage of school age enrolled in the public schools has increased to 37.62 per cent. The government allotted nearly \$10,500,000 for school purposes, or over 25 per cent of the total revenues. Seven hundred new primary

VI. TERRITORIES AND SPHERES OF INFLUENCE

classes were opened during the year providing places for about 35,000 additional children of these grades. Private schools now take care of approximately one-third of the students of secondary grade, the total enrolment being 93,618.

HEALTH CONDITIONS

Health conditions were, in general, good. The death rate for 1930 was 23.08 per 1,000, slightly higher than the 1929 rate, due to the appearance of both cholera and measles in epidemic form and to an increase in the number of deaths due to tuberculosis. Throughout the islands there were 5,094 cholera cases with 3,074 deaths. This disease was, however, brought under control, vaccination being widely used in that connection.

About 33,000 deaths resulted from tuberculosis. The legislature authorized the expenditure of \$100,000 by a special Tuberculosis Commission which was investigating the various aspects of the disease. There was a reduction of 2,000 deaths due to beriberi. The number of deaths from typhoid also showed a reduction. Five hundred and twenty lepers were rendered negative and released on parole, 1,201 lepers were detected and segregated, leaving a total leper population under observation of 6,849. A large modern treatment station was opened at Cebu during the year. A regional treatment station was also opened at Legaspi, and a new leprosy treatment station at Zamboanga was almost completed at the end of the year.

VIRGIN ISLANDS

By WILLIAM ATHERTON DUPUY

EXECUTIVE ASSISTANT TO THE SECRETARY OF THE INTERIOR

GOVERNMENT

Governor.—Paul M. Pearson, appointed March 18, 1931.

Organization and Administration.—The Act of Congress approved March 3, 1917, by which the purchase of the Virgin Islands was authorized, specifically continued in effect all local laws in force at the time of the transfer and not incompatible with the changed sovereignty, until repealed, altered or amended by the Colonial Council having jurisdiction. The President appointed an officer of the Navy as governor, and the administration continued under the supervision of the Navy Department until March 18, 1931, when the new civil administration under the Department of the Interior relieved the Navy in accordance with Executive Order issued by the President Feb. 27, 1931. Organization of the government falls roughly into the three divisions of legislative, executive, and judicial. The legislative branch consists of two colonial councils, one for St. Croix, and the other

for St. Thomas and St. John. They pass all the laws governing the islands, which are subject to veto by the governor and approval or veto by the President. The members are supposed to be representative of both the people and the government, in that approximately 70% are elected and 30% appointed by the governor, although the United States Treasury supplies more than 50% of the funds expended to run the government.

Revenues.—The Virgin Islands are not self-supporting, and in order to maintain the standards which have been set since the transfer, it is necessary for the local Colonial Councils to enact budgets considerably in excess of the local revenues, the deficits being made up from the Congressional Appropriation.

POPULATION

The population of the Virgin Islands in 1901 was 30,527; in 1917, when the islands were acquired by the United States from Denmark, the population had fallen to 26,051; and in 1930 it

GUAM AND AMERICAN SAMOA

was 22,012, of which only 2,010 were whites. The reduction is due largely to removal of emigration restrictions and transfer of the islands from Denmark.

SUGAR PRODUCTION

The only island producing sugar is St. Croix. From the peak of 11,228 tons of sugar exported in the fiscal year 1926, production has steadily declined and only 4,643 tons were exported during the fiscal year 1931. There being no artificial water supply, the size of the crop is dependent upon rainfall. Consequently, the uncertain yield and high manufacturing costs have made it more and more difficult for the St. Croix sugar factories to compete during the period of worldwide depression and low prices, though it could undoubtedly be made to prosper if properly organized and operated on a larger basis.

OTHER INDUSTRIES

Cattle.—The raising of cattle becomes an increasingly important island industry. During the fiscal year 1930, 1,813 head of cattle were exported from the islands, mostly to Porto Rico. Seventy per cent of the island's acreage is given over to cattle-raising, but this industry utilizes only 5% of the island's labor.

Bay Rum.—The fiscal year ended June 30, 1931, showed a total of 38,065 gallons of St. Thomas bay rum sold and exported, principally to the United States, an increase of approximately 30,000 gallons over the previous year.

Shipping.—The effect of the present adverse condition of world trade is reflected in the Harbor Department. During the year only 527 ships entered the harbor of St. Thomas, of

which 395 paid pilotage amounting to \$11,840., as compared with 595 ships, of which 455 paid pilotage amounting to \$14,038., in 1930.

HEALTH

There are municipal hospitals in St. Thomas, Christiansted and Frederiksted; also a Sanitation Service in each municipality; a Leper Asylum, Insane Asylum and a Poor Farm in St. Croix. There is also a dental service in each municipality. The total number of patients admitted to the hospitals during the last fiscal year was 2,680. A definite attempt is being made to reduce the high infant mortality attributable to poor food for mothers and babies as well as to the lack of care of babies.

EDUCATION

Education is compulsory. Though the population of the Virgin Islands has steadily declined during the past 10 years,—from 26,051 in 1917 to 22,002 in 1930,—the school population shows an increase from 2,671 in 1920 to 3,132 in 1930. While the total population has decreased 15½ per cent, the number of children enrolled in schools has increased 17.26 per cent. While there were 107 teachers in 1921, with an enrollment of 2,977, there were 111 teachers in 1931, with an enrollment of 3,132.

REHABILITATION

For the fiscal year 1932, Congressional Appropriations have been provided for an extensive program of rehabilitation, involving a total of \$216,000 with which to purchase land for homesteading purposes, to establish an agricultural and vocational school, and to improve the hotel facilities at St. Thomas.

GUAM AND AMERICAN SAMOA

By C. J. MOORE

COMMANDER, U. S. N., OFFICE OF NAVAL INTELLIGENCE, NAVY DEPARTMENT

GUAM

Government.—Captain E. S. Root, U. S. N., Governor. During the past

VI. TERRITORIES AND SPHERES OF INFLUENCE

men and women citizens. The Guam Congress, first established in 1917, was dissolved, and a new congress elected, and organized into two houses. The upper house is known as the Council and the lower the Assembly. The functions of the Congress are advisory. Commissioners of the municipalities, who perform administrative duties, are now elective instead of appointive.

Population.—The population in June, 1931, was 17,909, not including naval personnel. The natives are known as Chamorros. They are of Malayan origin but have strains of Spanish, Mexican, Philippine and Chinese blood.

Health.—The native population is dependent upon the local government for prevention of disease and for medical care. The naval medical officers assigned to the Naval Station, serve the island government, and are assisted by navy enlisted personnel, navy nurses, and native nurses trained in the naval hospital, and the island government hospital. For the fiscal year, 1931, the Congress appropriated \$22,000 to the island government for medical purposes.

Education.—The Department of Education consists of a Head of Department, who is a chaplain in the Navy; a Superintendent of Education, an American civilian; five American teachers; about 122 native teachers and the necessary clerical force. There are 26 public schools. Enrollment averaged 3,491 for the 1931 school year. Emphasis is being placed on vocational training, and during the past year an agricultural school farm has been established. The government also conducts schools at small cost for American children. Private schools have an enrolment of 169. Congress appropriated \$13,000 for expenditure for educational purposes in 1931. Total expenditures were \$61,629.13.

Agriculture.—The U. S. Department of Agriculture has maintained an agricultural experiment station in Guam for several years. Marketable produce has increased, but produce farming should be greatly improved to make Guam self-supporting. In

1930 the copra exports were 2,376 tons valued at \$187,471. At present the price of copra barely justifies harvesting, and very little is being sold in the United States. The 1931 exports were 1,948 tons valued at \$72,012.25.

Banking.—The Bank of Guam is a division of the office of the Treasurer of Guam, and is authorized to conduct the business of commercial banking. The capital stock is owned by the island government. During the fiscal year the gross earnings were \$29,456.30. The net earnings were \$9,846.06.

Shipping.—Imports and exports are handled largely by Federal Government vessels. The most important requirement of trade in Guam is the establishment of regular steamer service between Guam, the United States and Philippines.

Revenues.—Revenues and expenditures for the fiscal year, 1930, were \$148,903.21 and \$165,442.85 respectively, and for the fiscal year, 1931, \$146,219.59 and expenditures \$159,987.38.

AMERICAN SAMOA

Government.—Captain Gatewood S. Lincoln, U. S. Navy, Governor. The American Samoan Commission, consisting of two senators, two congressmen and three Samoan chiefs, met in September and October, 1930, and recommended to the President an organic act for the Government of American Samoa. The proposed act was not passed by the 71st Congress. As a separate action the Governor of American Samoa proclaimed the bill of rights contained in the Organic Act on April 1, 1931, and separated the duties of Secretary of Native Affairs from those of the American Judge, which had been held by one person. Under the new organization the duties of the Secretary of Native Affairs are performed by the Attorney General, Lieutenant Commander F. L. Lowe, U. S. N., and those of Chief Justice of the High Court by Judge H. P. Wood.

Hurricane.—During January, 1931, the islands were visited by a destructive storm which did considerable

DISTRICT OF COLUMBIA

damage to hospitals, schools, roads, and other public works, and destroyed whole villages. There was fortunately no loss of life. Food supplies were greatly diminished and it was necessary to provide food from outside sources. The American Red Cross donated \$2,500 for relief work and the Congress appropriated \$30,000 for the repair of public works.

Revenues.—The total customs department revenue from all sources for 1927-1928 was \$72,833.43; for 1928-1929, \$73,923.30; and for 1930-1931, \$68,525.01. The value of merchandise on which duty has been collected, excepting parcel post, during the fiscal year 1928 was \$167,064.00; 1929, \$172,465.00; 1930, \$146,534.00; and 1931, \$147,815.00.

Taxes.—Prior to 1931, poll and school taxes were levied on all males five feet two inches or more in height. For the fiscal year 1931 taxes were levied on males of 18 years and older. The tax for 1930 was reduced by vote of the Fono or legislative body from \$11.50 to \$10 per tax payer on account of economies effected in the administration of the government.

Copra.—Production of copra for 1929 was 1,687 tons. The crop was sold at a contract price of \$92.51 per ton. The gross receipts were \$147,215.90. For 1930, copra production amounted to 1,619 tons. The contract price was \$83.40 per ton, and the gross receipts \$135,028.18. The contract price for 1931 is \$50.15.

Banking.—The Bank of American Samoa is owned by the Government.

In the last four years there has been a 141 per cent increase in commercial deposits. The net earnings for the fiscal year 1931 were \$3,008.25.

Population.—The population of American Samoa including Swain's Island by 1930 Census, was 9,866, not including naval personnel. Records indicate an increase of 217 during the past year. Over 85 per cent of the native population are full blooded Polynesians.

Education.—There are 24 schools in the public school system. The enrolment in 1931 was 2,100. The teaching staff consists of six white teachers and 48 native teachers. Teachers' salaries vary between \$30.00 and \$75.00 per month for white teachers and between \$40.00 and \$50.00 per month for native teachers. The course of instruction goes in general only to the fourth grade except at Poyer School in Pagopago, where all grades including the eighth are taught. Instruction includes music, domestic arts, manual training and athletics. There are four private schools with an enrolment of 400 pupils. School expenses for 1931 amounted to \$18,539.69.

Health.—Tuberculosis, pneumonia and filariasis were the cause of over half of the deaths during the year. Health education and more hospital facilities are necessary to combat the first two causes of death. Great strides in the elimination of filariasis have been made since American administration began.

DISTRICT OF COLUMBIA

BY W. REED WEST

PROFESSOR, GEORGE WASHINGTON UNIVERSITY

TRAFFIC LAWS

Administration Changes.—Experience in dealing with traffic problems has led to an act embodying several important changes in the traffic laws. (71st Cong., Sess. III, Chap. 317.) The independent office of Director of Traffic, established in the act of

March 3, 1925, is abolished and his powers transferred to the Commissioners of the District of Columbia, who are authorized to make and enforce usual and reasonable traffic rules and regulations, regulations concerning the registration of motor vehicles, and the issuance and revocation of

VI. TERRITORIES AND SPHERES OF INFLUENCE

operators' permits. A department of vehicles and traffic is set up in the District government, to handle the issuance and revocation of operators' permits, the registration and titling of motor vehicles, the making of traffic studies, the installation of traffic signs, and other administrative matters, under the direction of the Commissioners. A director of vehicles and traffic is placed in charge of this department.

Control of Common Carriers.—

The Public Utilities Commission is given additional powers, so as to permit it to control the routing of common carriers, their schedules, stops, and in part their equipment. As these powers of the Public Utilities Commission over common carriers may lead to regulations in conflict with those of the Commissioners as to other traffic, a joint board, consisting of the Commissioners and the members of the Public Utilities Commission, is established to which are referred regulations of the Public Utilities Commission affecting traffic and traffic regulations of the Commissioners affecting common carriers, and which "by the affirmative action of any three members thereof," may adopt rules and regulations.

Penalties.—For violation of the traffic regulations, minimum fines and penalties have been abolished, while the maximum penalties have been increased. Higher maximum penalties are provided for successive offenses committed within a fixed period after the first offense. Where penalties are not provided in the act, the Commissioners are authorized to fix reasonable penalties of fine, or imprisonment not to exceed ten days in lieu of or in addition to any fine for violation of regulations promulgated under authority of the traffic acts. The Commissioners may also for any cause which they or their agent may deem sufficient, revoke or suspend an operator's permit, with provision for appeal to the courts.

Automobile Regulations.—Until the passage of this act, there were no provisions for the registration of automobile titles in the District. The

new law provides that after Jan. 1, 1932, no automobile shall be registered until a certificate of title has been granted. The details of the titling are left to the Commissioners, with the limitation that the fee shall not be over \$1, and with provision for appeal to the courts. With certain exceptions the parking regulations are not to be applicable to members of Congress "while on official business."

SCHOOLS

Public schools are indirectly affected by an act (Chap. 302) which directs the Public Utilities Commission to fix reduced fares for school children, under the age of eighteen years, going to and from school on street railway and bus lines, not to be in excess of three cents. Regular fares on street railways in Washington are ten cents each or four tokens for thirty cents.

ADVERTISING SIGNS

There has been much discussion of the problem of advertising signs in Washington, especially the billboards along the roads leading into the city. In order to maintain standards of beauty in the national capital, as well as to cooperate in the national movement for the beautification of the public roadways, there was much agitation for the abolition of unsightly signs along the roads that lead into Washington. This movement was given further impetus by the plans for the bicentennial of George Washington which is to be celebrated in 1932. The result has been an act (Chap. 399) authorizing the Commissioners, after public hearings, to make such regulations as they may deem advisable "in so far as necessary to promote the public health, safety, morals, and welfare", in the control of all outdoor signs and other forms of exterior advertising on public ways and public space under their control and on private property within public view. Persons and firms in the business of erecting or maintaining such signs must be licensed, with power in the Commissioners for good cause to reject or revoke. Enforcement of this law with the expected cooperation

from the states of Maryland and Virginia will result in improved conditions on the roads in the neighborhood of the capital.

CORPORATIONS

The powers of corporations have been enlarged (Chap. 120). Under the old laws corporations were limited in amending their charters substantially to adding to and diminishing capital stock, and changing the name of the business. This act modernizes the corporation law of the District in this respect by permitting corporations having capital stock to provide by amendments to their charters for such powers and purposes as would originally have been permissible. Under the old laws there was no direct statutory authority permitting corporations to create preferences in any class of stock. The present act permits one or more classes of preferred stock and one or more classes of common stock. Voting powers of any class are to be determined in the charter. The old law did not permit the sale, lease or exchange of all the assets of a corporation, except upon the common law principle of a unanimous vote. The new law permits such transfers upon a vote of two-thirds of each class of stock, including classes with no vote under the charter. Dissenting stockholders may demand and receive an amount equal to the fair value of their stock, unaffected by the transfer, with appeal to the courts to determine the "fair value," which amount is to constitute a lien on the proceeds of the transfer.

PAVING ASSESSMENTS

The old Borland Act, dealing with special assessments for street paving had based such assessments upon the front foot rule, levying half the cost of the paving upon abutting property, except that width of a street beyond forty feet, and the area within intersections were not assessed. Assessments upon property in Washington according to its foot frontage, however, leads to many inequalities, as the large number of diagonal avenues produces many lots of tri-

angular or irregular shape, fronting upon two or more streets. Some lots face upon five streets. Decisions of the courts holding assessments invalid in such cases had practically nullified the Borland Act. A new act (Chap. 246) includes the same principles as the Borland Act, but lays down certain other limitations with a view to relating the assessment to the benefits received. It is provided that the maximum linear front foot assessment shall not exceed \$3.50 per linear front foot; that the total assessment against any property shall not exceed the number of square feet of area multiplied by one per cent of the linear front foot assessment, so that lots of less than one hundred feet in depth will be assessed proportionately less than lots of one hundred feet or more in depth; and that the total assessment shall not exceed twenty per cent of the assessed tax value of the property, excluding improvements. The purpose of these provisions is to equalize the assessments in such a way that shallow lots will not be assessed for the same amount as deep lots, and also to reduce the assessment to an amount more in proportion to the benefit received when a street is paved for heavy traffic in an area where the value of the land is low. Another section provides that where property abuts upon two or more streets the total assessment shall not exceed three and one-half cents per square foot of the area of the property. For fear that even with the above restrictions there might be inequalities in the application of the law, it is provided that, upon appeal, the Commissioners may abate or reduce the assessment where the property is not benefited by the improvement, is benefited less than the amount of the assessment, or is inequitably assessed with relation to other abutting property. Thus, the property will not completely escape assessment if the courts should hold the original amount to be confiscatory or inequitable.

POLICE DEPARTMENT

There has been much agitation over

VI. TERRITORIES AND SPHERES OF INFLUENCE

alleged police brutality in the use of "third degree" methods while investigating suspects, and there have been some convictions in the courts. Changes in the administrative personnel of the department have included the superintendent of police.

GEORGE WASHINGTON BICENTENNIAL

Plans are under way for the cele-

bration of the bicentennial of George Washington, and Congress has authorized the appropriation of \$100,000 to be expended by the District of Columbia Bicentennial Commission (Chap. 289). The Committee had previously depended upon private subscriptions. The sum of \$338,195 was appropriated in connection with the national George Washington Bicentennial Commission.

SPHERES OF AMERICAN INFLUENCE

BY ROY MALCOM

PROFESSOR, UNIVERSITY OF SOUTHERN CALIFORNIA

HAITI

Reestablishment of Constitutional Government.—In the November (1930) meeting of the newly elected Haitian Congress Joseph Jolibois, an opponent of American occupation, was elected President of the Chamber of Deputies. A few days later the National Assembly elected Stenio Vincent as President of Haiti. It is a significant fact that President Vincent is the first constitutional president since the American military occupation began in 1915. The new president issued a statement on Nov. 27 expressing a desire to see amicable relations maintained with the United States.

Resumption of Diplomatic Relations.—It may be recalled that the Forbes Investigating Commission sent to Haiti by President Hoover in the spring of 1930 had recommended the resumption of diplomatic relations between the United States and Haiti. Brig. Gen. Russell who had been at the head of the American Military Commission since 1922 left for the United States on Nov. 12 (1930) and on Nov. 18 Dr. Dana G. Munro, the newly appointed Minister from the United States, arrived in the Island. On Feb. 16 Dantes Bellegarde, the first minister to be sent to the United States by the newly established constitutional government in Haiti, was received by President Hoover. The President expressed

himself as highly pleased with the progress made, and the promise of better things, under the program as recommended by the American Commission.

Education.—The special United States Commission on Education, which had been appointed by President Hoover, submitted a report to the President on Nov. 30, 1930. Its most important recommendation was that the separate vocational school system, set up in Haiti during American military occupation, complaints against which had been lodged by Haitians, should become an integral part of the national school system of Haiti. The Commission further recommended that the United States should render financial and administrative aid to Haiti in developing an adequate system of education. Dr. R. P. Moton, principal of Tuskegee Institute, acted as head of the Commission.

Denunciation of U. S. Treaty of 1915.—On June 19 the lower house of the Haitian Congress adopted the following resolution denouncing the treaty of 1915 with the United States: "The treaty having expired on May 3, 1926, without having been renewed by any valid act, no convention analogous to it has existed since then. The presence of troops of the American occupation, which were not provided for even by the limited convention of 1915, has become needlessly

SPHERES OF AMERICAN INFLUENCE

exhaustious since the establishment of a stable government as a result of the elections of October 14 and November 18, 1930."

Administration Transfer Agreement.—On August 5 Haiti and the United States entered into an agreement that on Oct. 1 the administration of Haitian affairs would be transferred to the Haitian government. In carrying out the agreement the United States, through the State Department, issued the following statement on Oct. 1: "It represents a complete transfer to Haitian authority of all services, excepting the office of the Financial Adviser-General Receiver and the Garde d'Haiti (the gendarmerie force of Haiti), both of which services require especially careful attention and safeguards on account of the obligations assumed by this government jointly with that of Haiti in connection with the bond issue made under the provisions of the treaty of 1915, the additional act of 1917, and the protocol of Oct. 3, 1919.

"In the services returned to Haitian authority, speedier Haitianization has been effected than the recommendations of the Forbes Commission and even that at first proposed by the Haitian Government itself.

"In the case of the Garde d'Haiti, it is not practicable to withdraw American officers immediately because of the necessity of first training Haitian officers to replace them. This fact was recognized by the Forbes Commission, which published in its report a table setting forth a suggested schedule for the replacement of the American officers. Since the Commission's visit the process of training and promoting Haitian officers has proceeded at an even more rapid rate than that contemplated in this table, so that there is every indication that trained and experienced Haitian officers will be available to replace all American officers in the Garde before expiration of the treaty in May, 1936."

NICARAGUA

Guerrilla Warfare.—Toward the end of 1930 guerrilla warfare again

became a serious menace in Nicaragua. It was reported that on Dec. 31, 1930, and on Jan. 3, 1931, that Sandinista insurgents had ambushed and killed ten American marines and wounded four in the two attacks. These attacks rekindled the fires of opposition in the United States Senate. Early in January Sen. Johnson of California introduced a resolution in the Senate which demanded a detailed account of American-Nicaraguan relations. President Moncada reiterated his opposition to the withdrawal of United States marines. Rebel opposition continued throughout January. On Jan. 15 President Moncada sent a cablegram to *The New York Times* in which he stated that the American marines had "worked arduously to secure liberty and order in my country. For this the Nicaraguans are obligated to wage war against the bandits."

Financial Credit.—On Feb. 4 it was announced that Secretary of State Stimson had approved of a credit of \$1,000,000 to relieve the financial stringency in Nicaragua. The International Acceptance Bank of New York made the arrangement. A part of these funds were to be used for strengthening the National Guard and to develop public works.

Earthquake.—A severe earthquake on March 31 practically destroyed Managua, capital of Nicaragua, including the American legation. President Hoover authorized the Red Cross and other agencies to proceed immediately with relief work.

Protection of Americans.—Disturbances of a serious nature in eastern Nicaragua in the early part of April led Secretary of State Stimson to send a message of instructions to the American legation at Managua on April 17. "In view of the outbreak of banditry," ran the instructions, "in portions of Nicaragua hitherto free from such violence, you will advise American citizens that this government cannot undertake general protection of Americans throughout that country with American forces. To do so would lead to difficulties and commitments which this government does not propose to

VI. TERRITORIES AND SPHERES OF INFLUENCE

undertake. Therefore the department recommends to all Americans who do not feel secure under the protection afforded them by the Nicaraguan Government through the Nicaraguan National Guard to withdraw from the country or at least to the coast towns, whence they can be protected or evacuated in case of necessity. Those who remain do so at their own risk and must not expect American forces to be sent inland to their aid."

President Hoover's Statement.—

This pronouncement by Secretary Stimson called forth a number of very critical comments, some of them quite unfriendly. On April 21 President Hoover issued a statement in general approval of Secretary Stimson's statement of April 18 which amplified the Secretary's statement of the day before, and which condemned rather severely the insurgent Sandino. "Sandino," stated President Hoover, "has placed himself and his band outside the civilized pale by the cold-blooded murder of eight or nine American civilians and many Nicaraguans at isolated places in the interior."

"The Nicaraguan Government has shown itself fully cognizant of its responsibilities. It is moving vigorously despite the difficulties created by the earthquake. While it may require some time to accomplish their purpose, due to the mountainous and jungle character of the country, I am confident Sandino will be brought to justice."

U. S. Occupation Forces Reduced.—On June 5 Secretary of State Stimson issued a statement that the forces of occupation in Nicaragua had been reduced by more than 500 men. This left a total of 970 officers and men belonging to the navy and the Marine Corps. This force is to be used for American supervision of the Presidential election in 1932 and for purposes of training the national guard of Nicaragua.

U. S. Supervision of Elections.—On July 11 the American State Department announced that it had designated Major C. F. B. Price of the Marine Corps as "electoral observer" of the Nicaraguan municipal elections

to be held in the following October. In the selection of this "observer" of municipal elections the United States "leaves to the Nicaraguans responsibility for the conduct of these elections before American supervision of their national elections is finally withdrawn. It is hoped that, by this preparation, Nicaragua will be in a position to conduct free and fair elections without assistance after 1932."

PANAMA

On Jan. 2 the constitutional administration of President Florencio H. Arosemena was overthrown by a sudden revolution. On the same day the Panaman Supreme Court declared Dr. Ricardo J. Alfaro, Panaman Minister to the United States for the past eight years, to be constitutional successor of President Arosemena. He was sworn in on Jan. 16. On the day before, Jan. 15, the American State Department notified United States Minister Davis at Panama that the recognition already accorded to the former government of President Arosemena would be continued to the Alfaro regime.

It was reported on May 9 that a clash had occurred between municipal police at Colon and United States military police. As a result of this incident, Major Gen. Preston Brown, commanding the United States troops in the Canal Zone, ordered that the city of Colon be placed "out of bounds" for both the officers and enlisted men of both the navy and army as long as there was likelihood of disorder.

CUBA

Political Unrest.—Rioting broke out in Cuba in the early part of November, 1930. For a time the situation threatened to become serious. Clashes between students and police resulted in the death of several persons. American property in Cuba and the United States Embassy were given special police protection as a precautionary measure. President Machado early in December called a secret cabinet meeting to deal with the situation. United States Amba-

MARITIME JURISDICTION

ador Harry F. Guggenheim was reported to be present at this meeting. Throughout January there were unrest and rumblings of an impending revolution. The suppression of certain newspapers by President Machado brought protests to Secretary of State Stimson from executives of the Press Congress of the World. Critical comments upon President Machado's policies by John T. Wilford, editor of an anti-Machado newspaper, resulted in his deportation. Upon arriving in the United States, Wilford made a statement in which he claimed that American Ambassador Guggenheim had supported him.

Proposed Reforms.—By the middle of September a number of constitutional reforms had been agreed upon by those in power and were endorsed by President Machado in a public address. The political parties

opposing the Machado regime did not look upon these proposed reforms as holding out much promise. Dr. Cosme de la Torriente, representative of the opposition group in Washington, made the following statement on Sept. 22: "The proposed reforms do not satisfy the opposition nor meet with the approbation of the people in Cuba. In the first place, they do not provide for new elections of all public offices which are now illegally held by Machado's creatures. Machado's gesture of reform is primarily to impress and hoodwink public opinion in foreign countries, especially in the United States, where he is contemplating new loans. The so-called reforms now pending in Cuba have their ill-disguised purpose of perpetuating in office the friends and supporters of Machado, with Machado behind the scenes but still in power."

MARITIME JURISDICTION

BY CHARLES E. HILL

PROFESSOR, GEORGE WASHINGTON UNIVERSITY

PRESERVATION OF HALIBUT

Treaty with Canada.—On May 9, 1931, ratifications of a convention providing for the preservation of halibut were exchanged between Canada and the United States. The period from Nov. 1 to Feb. 15 each year constitutes a closed season. Nationals or inhabitants and fishing vessels are prohibited from fishing for halibut in the territorial waters and in the high seas off the western coasts of the United States, including the southern as well as the western coasts of Alaska and of Canada. Bering Sea is included. Any halibut taken incidentally when fishing for other fish may be used for food by the crew of the vessel. Any halibut beyond that needed for the crew is to be landed and turned over to the U. S. Department of Commerce or to the Department of Marine and Fisheries of Canada to be sold to the highest bidder, the net proceeds to be sent to the treasuries of the respec-

tive countries. Canadian authorities may not seize vessels within the territorial waters of the United States; neither may American authorities seize vessels within Canadian territorial waters. On the high seas nationals and vessels fishing for halibut in violation of the convention may be seized by the authorities of either party and delivered to the officers of the country to which the vessel and the national may belong for prosecution. The commission established by the convention of March 2, 1923, is retained. It may divide convention waters upon the high seas into areas, supervise the licensing and clearance of fishing vessels, collect statistics and make regulations for the conservation of the halibut.

ADMIRALTY JURISDICTION

Seizure Without Warrant or Probable Cause.—The yacht *Surf* was an American vessel seized within the three-mile limit off Montauk

VI. TERRITORIES AND SPHERES OF INFLUENCE

Point by the coast guard for transportation of liquor. A motion was made by the defense to suppress the evidence because the vessel had been visited and searched without probable cause. The court denied the motion and ruled that neither a warrant nor probable cause were prerequisites for authority of the coast guard to board the vessel and to inspect for violation of the navigation, tariff, or other laws of the United States when the vessel comes within the territorial waters. (*U. S. v. Hayes*, 52 F. [2d] 977.)

Forfeiture of Vessel and Prosecution of Crew.—The same ruling as in the above case was upheld by the circuit court of appeals for the third circuit, Judge Davis. In addition the defendants contended that inasmuch as forfeiture proceedings had been brought against their vessel they could not be prosecuted. The evidence showed that they were only employees and in no way concerned with the forfeiture of the vessel. Their contention was overruled. (*Awalt v. U. S.* 47 F. [2d] 477.)

No Manifest, Arrival in Customs District.—The British schooner *Deauville* and its cargo of liquor were forfeited for want of a manifest. The master submitted that he had a manifest which he kept in his locker, but the storm had filled the locker with water and dissolved the paper. The evidence revealed that several other papers were found in the locker and that they had not been dissolved. Moreover, the vessel was seized within twelve miles of the Florida coast at a point several hundred miles off its prescribed course. Then, too, it had on board sixteen cases of liquor less than when it left Nassau. (49 F. [2d] 372.)

The French vessel *Metmuzel* was seized by the coast guard within six miles of the shore of the United States, running without lights and headed for shore. The cargo consisted of liquor. The master could produce no manifest. The district court at Norfolk decreed the forfeiture of vessel and cargo. Appeal was taken to the Circuit Court of Ap-

peals, Fourth Circuit. The assertion was that the vessel had not arrived within a collection district and was therefore not subject to forfeiture. The circuit court of appeals held that when the vessel came within the twelve mile limit she had arrived within the customs district and that the vessel was bound for the United States since cargo was destined for delivery to smugglers within territorial waters. (49 F. [2d] 368.)

Liens on Forfeited Vessels.—The Crowninshield Shipbuilding Company constructed the yacht *Mardelle*, completing and delivering it in July, 1930, cost \$9,900. About four weeks later, on Aug. 26, 1930, the vessel was seized while violating the National Prohibition Act. The owners having no defense, permitted forfeiture by default. The Crowninshield Shipbuilding Company put in a claim of lien for alterations, materials and repairs for \$7,998.82. An examination of the shop record revealed that five of the sheets bore the date of July 22, 1930, and disclosed items that might be expected to go into the original construction of the vessel. Only \$778.99 appeared to be for actual repairs, entered on the record from August 5 to 25, 1930. Judge Letts felt so confident that the claim presented was accompanied by false testimony that he dismissed the claim in its entirety. (47 F. [2d] 791.) In the *Antigostine* Judge Galston held that the rights of an innocent lienor for supplies can be maintained even though a decree forfeiting the vessel had been issued. It was held, too, that the innocent lienor was not barred by laches from right to vacate forfeiture, when he was not apprised of the seizure until after forfeiture of the vessel. (44 F. [2d] 170.)

Arbitration.—In a group of cases, one of them the British Diesel tug *Gerald A. Fagan*, Judge Manton for the Circuit Court of Appeals, Second Circuit, held constitutional the statute authorizing the district courts in proceedings in admiralty to direct parties to proceed with arbitration. It was argued in opposition that the

Constitution provides the judicial power shall extend to all cases of admiralty and maritime jurisdiction. Therefore, Congress cannot vest any judicial power in any body other than a court duly created. The court held that the Arbitration Act did not deprive the district court of jurisdiction but rather enlarged that jurisdiction so as to embrace enforcement of arbitration agreements by ordering such arbitration to proceed and by entering a decree upon the award. The act is procedural in character and falls within the competence of Congress. The court based its decision on the elastic clause of the Constitution. This decision is of special importance because it may render unnecessary the approval by the Senate of various pending treaties providing for arbitration. (49 F. [2d] 215.)

Suits by Foreign Corporations in U. S. Courts.—The Ford Motor Company of Australia asked for a libel against the Canadian vessel *The Canadian Commander*. Counsel for the owners of the vessel introduced a motion for an order to dismiss the libel on the grounds that (1) the defendant was an Australian corporation and the owners of the vessel were Canadian with principal office in Montreal, (2) the contract of carriage was entered into in Halifax,

Nova Scotia, (3) the shipment was between two foreign ports. No part of the contract was to be performed in the United States. It was held by Judge Moscovitz that the retention of jurisdiction of admiralty suit between foreigners is within court's discretion. The motion to dismiss libel was denied because the expenses of witnesses would not be any greater than in Montreal or Sidney and because the owners of the vessel maintained an office in New York. (43 F. [2d] 857.)

The Brazilian vessel, *Almirante Jacequay*, coming down the Scheldt River in Belgium, sheered from her side of the river and collided with the British vessel, *Silarus*. The owners of the British vessel brought suit in the United States District Court for the Eastern District of New York. The court held that the Brazilian vessel was at fault in not making proper allowance for the flood tide of the Scheldt. The owners of the Brazilian vessel had to pay damages with costs to the owners of the British vessel. Early in the proceedings the court had overruled a motion to vacate attachment for lack of jurisdiction. Both the Brazilian and the British corporations maintained offices in New York City. (50 F. [2d] 207.)

PART THREE

GOVERNMENTAL FUNCTIONS

DIVISION VII

PUBLIC FINANCE AND TAXATION

NATIONAL EXPENDITURES AND REVENUES

By MERLIN H. HUNTER

PROFESSOR, UNIVERSITY OF ILLINOIS

FEDERAL APPROPRIATIONS

Introductory.—In the past year much attention has been given to the tax burden, its effect upon the recovery of industry, and to measures through which economies may be effected. This has been true, not only for the Federal government, but for other governments as well. In his

budgetary message the President is expected to discuss the state of Federal finances, and we can do no better than to draw somewhat upon this for a review of conditions.

Expenditures, 1931, 1932.—The following table shows the appropriations for 1931 and 1932.

FEDERAL APPROPRIATIONS FOR 1932 AND 1931

	Appropriations, 1932	Appropriations, 1931
Legislative establishment:		
Senate.....	\$ 3,252,522.00	\$ 3,244,744.00
House of Representatives.....	8,182,298.00	8,176,754.00
Architect of the Capital.....	10,336,609.00	8,472,417.58
Botanic Garden.....	175,082.00	194,560.00
Library of Congress.....	2,457,722.00	3,767,742.00
Government Printing Office.....	4,294,000.00	3,270,000.00
Miscellaneous.....	185,050.00	185,050.00
Total, legislative establishment.....	\$ 28,883,283.00	\$ 27,311,267.58
Executive Office.....	\$ 473,400.00	\$ 422,320.00
Independent establishments:		
Alaska relief funds.....	15,000.00	15,000.00
American Battle Monuments Commission.....	304,250.00	1,000,000.00
Arlington Memorial Bridge Commission.....	1,000,000.00	1,000,000.00
Board of Mediation.....	318,545.00	328,380.00
Board of Tax Appeals.....	654,460.00	650,000.00
Bureau of Efficiency.....	201,470.00	224,330.00
Civil Service Commission.....	1,678,442.00	1,542,952.00
Commission of Fine Arts.....	9,995.00	9,080.00
Employees' Compensation Commission.....	4,736,380.00	4,210,000.00
Federal Board for Vocational Education.....	10,087,260.00	9,400,400.00
Federal Farm Board.....	101,900,000.00	1,900,000.00
Federal Oil Conservation Board.....	20,000.00	17,220.00
Federal Power Commission.....	319,270.00	299,170.00
Federal Radio Commission.....	466,820.00	450,000.00
Federal Reserve Board.....	1,609,200.00	2,560,336.00
Federal Trade Commission.....	1,625,986.00	1,580,000.00
General Accounting Office.....	4,363,320.00	4,193,500.00

NATIONAL EXPENDITURES AND REVENUES

	Appropriations, 1932	Appropriations, 1931
George Rogers Clark Bicentennial Commission...	800,000.00	.....
George Washington Bicentennial Commission....	338,195.00	362,075.00
Housing Corporation.....	33,700.00	48,950.00
Individual records, civil-service retirements.....		150,000.00
Interstate Commerce Commission.....	11,975,593.00	10,329,963.00
Investigation of enforcement of prohibition and other laws.....		250,000.00
Mount Rushmore National Memorial Commission		60,000.00
National Advisory Committee for Aeronautics....	1,053,790.00	1,321,000.00
National Capital Park and Planning Commission.	4,000,000.00	1,000,000.00
Personnel Classification Board.....	220,830.00	.....
Porto Rican Hurricane Relief Commission.....	2,000,000.00	2,000,000.00
Protecting interests of the United States in oil leases and oil lands.....	20,000.00	.....
Public Buildings and Public Parks of the National Capital.....	5,595,685.00	4,289,044.00
Public Buildings Commission.....	125,000.00	100,000.00
Smithsonian Institution.....	1,212,924.00	1,203,671.00
Supreme Court Building Commission.....	4,250,000.00	1,000,000.00
Tariff Commission.....	1,240,000.00	785,000.00
United States Geographic Board.....	9,538.00	15,760.00
United States Shipping Board and Merchant Fleet Corporation.....	39,406,000.00	6,346,000.00
Veterans' Administration.....	946,289,758.00	*836,244,020.00
Yorktown Sesquicentennial Commission.....		8,000.00
Total, Executive Office and independent estab- lishments.....	\$1,148,354,811.00	\$ 895,321,171.00
Department of Agriculture.....	\$ 225,537,476.00	\$ 173,145,474.50
Department of Commerce.....	54,638,226.00	54,619,485.00
Department of the Interior.....	85,345,211.73	83,875,323.74
Department of Justice.....	51,988,261.00	†45,395,922.00
Department of Labor.....	13,446,400.00	12,230,170.00
Navy Department.....	349,628,298.00	382,505,193.26
Post Office Department:		
Postal Service payable from postal revenues.....	735,003,057.00	725,844,097.00
Postal deficiency payable from Treasury.....	114,041,000.00	111,202,200.00
State Department.....	17,731,306.34	17,816,022.14
Treasury Department.....	281,296,380.00	359,638,676.00
War Department, including Panama Canal.....	464,645,806.00	456,041,951.00
District of Columbia.....	47,796,047.00	48,397,432.00
Total, ordinary, including Postal Service.....	\$3,618,335,563.07	\$3,393,344,355.22
Reduction in principal of the public debt:		
Sinking fund.....	\$ 409,410,600.00	\$ 392,152,200.00
Other redemptions of the debt.....	59,099,305.00	48,846,000.00
Principal of the public debt.....	\$ 468,509,905.00	\$ 440,998,200.00
Interest on the public debt.....	581,000,000.00	603,000,000.00
Total, including Post Office Department and Postal Service.....	\$4,667,845,468.07	\$4,437,342,585.22
Deduct Postal Service payable from postal revenues.	735,003,057.00	725,844,097.00
Total payable from the Treasury.....	\$3,932,842,411.07	\$3,711,498,488.22

* Figures for 1931 include the appropriations transferred under the act of July 3, 1930, from the Interior Department (pensions) and the War Department (National Homes for Disabled Volunteer Soldiers).

† Figures for 1931 include appropriations transferred under the acts of May 27, 1930, and June 17, 1930, from the Treasury Department (Prohibition Bureau and the United States Customs Court).

Increases and Decreases, 1932 over 1931.—The total appropriations for 1932 payable from the Treasury shown in the foregoing table is \$221,000,000 more than the appropriations for 1931. The appropriations for 1932, however, contain \$100,000,000 for the revolving loan fund of the Federal Farm Board for which no amount appears in the 1931 appropriations. Of other large items of increase the Veterans' Administration calls for \$110,000,000, the Shipping Board \$35,000,000, the road program \$51,500,000 while tax repayments are estimated at \$92,000,000 less.

VII. PUBLIC FINANCE AND TAXATION

ITEMS OF CHANGE IN FEDERAL APPROPRIATIONS (1932 and 1931)

	Increases	Decreases
Legislative establishment:		
House Office Building.....	\$ 2,300,000	
Senate Office Building.....	2,868,000	
Library of Congress Annex.....	1,000,000	
Enlarging Capitol Grounds.....		\$ 4,763,000
Library of Congress, Vollbehr Collection.....		1,500,000
Government Printing Office Building.....	1,000,000	
Independent establishments:		
Federal Farm Board.....	100,000,000	
George Rogers Clark Sesquicentennial Commission.....	800,000	
National Capital Park and Planning Commission.....	3,000,000	
Public Buildings and Public Parks of the National Capital.....	1,300,00	
United States Shipping Board and Merchant Fleet Corporation—		
Shipping fund.....		3,300,000
Construction loan fund.....	35,000,000	
United States Supreme Court Building.....	2,750,000	
Veterans' Administration—		
General administration and hospitalization.....	17,090,000	
Military and naval compensation.....	71,290,000	
Military and naval insurance.....	1,500,000	
Government life insurance.....	890,000	
Army and Navy pensions.....	9,500,000	
Hospital and domiciliary construction.....	9,350,000	
Total, Veterans' Administration.....	\$109,620,000	
Department of Agriculture:		
Forest Service.....	\$ 1,450,000	\$ 1,730,000
Plant quarantine and control.....		
Forest roads.....	1,500,000	
Federal-aid roads.....	50,000,000	
Mount Vernon Highway.....		2,000,000
Flood relief, roads.....		1,300,000
Department of Commerce:		
Aeronautics Branch.....		
Bureau of the Census.....	1,160,000	
Bureau of Standards.....		2,230,000
Department of the Interior:		
Indian Service.....		870,000
Indian trust funds.....	1,390,000	
Bureau of Reclamation.....		5,000,000
National parks, land purchases.....	4,420,000	
St. Elizabeths Hospital, construction.....		1,820,000
Department of Justice:		
Bureau of Prohibition.....	1,150,000	
Expenses, etc., United States courts.....	2,480,000	
Penal and correctional institutions.....	1,570,000	
Department of Labor.....	2,010,000	
Navy Department:		
Bureau of Engineering.....	1,190,000	
Bureau of Supplies and Accounts.....		1,100,000
Bureau of Aeronautics.....		1,940,000
Major alterations of vessels.....		1,180,000
Increase of the Navy.....		7,400,000
Postal Service: Deficiency.....		21,100,000
Treasury Department:		
Refunding taxes illegally collected.....		2,830,000
Construction of public buildings.....		
Customs Service.....	10,330,000	2,830,000
War Department:		
Buildings at military posts.....	1,000,000	
Other Quartermaster Corps items.....		1,410,000
Air Corps.....		1,230,000
Maintenance and improvement of rivers and harbors—		
Annual appropriation.....	1,630,000	
Permanent specific and indefinite appropriations.....	5,000,000	
District of Columbia:	4,580,000	
Municipal Center.....		
Net increase other items.....		3,060,000
Public debt:		
Reduction of principal.....	2,465,000	
Interest.....	27,500,000	
		22,000,000

NATIONAL EXPENDITURES AND REVENUES

U. S. Shipping Board.—The appropriations for the Shipping Board for 1932 show a new increase of about \$3,000,000 over the appropriation for 1931. This increase is due to the estimate of \$35,000,000 for the construction-loan fund of the Shipping Board, which is a new item of appropriation. Heretofore all authorized loans for the construction of ships by private parties have been met by the receipts credited to the construction-loan fund of the Shipping Board arising from sales of ships or property and other sources. There will be required, however, a direct appropriation to the credit of this fund to provide for authorized loans during the fiscal year 1932. Decreases in the 1932 appropriations of the Shipping Board for other purposes amount to approximately \$2,000,000, so that the net increase is \$33,000,000.

Veterans' Administration.—Because of the combination of hitherto separate departments for the first time there is presented in the appropriations of one establishment the funds necessary to carry on the activities of the Government which deal directly with the administration of veterans' affairs. The total of the appropriation is \$945,289,000, but not all of this pertains to veterans' affairs. Approximately \$21,000,000, which pertains generally to the civil-service retirement fund and the administration of the retirement law, has no application to veterans as such. This function was transferred to the Veterans' Administration because it formed a part of the duties of the Bureau of Pensions which was merged intact into the new establishment. The appropriation for the Veterans' Administration contained in this Budget is approximately \$110,000,000 in excess of the appropriations for similar purposes for 1931. The principal items of increase are in general administration and hospitalization, \$17,428,000—which is due principally to enlarged operating costs occasioned by the increase in the number and capacity of hospitals and domiciliary facilities; military and naval compensation, \$71,300,000; construction of new hospitals and domiciliary facilities,

\$9,350,000; and Civil War and Spanish-American War pensions, \$9,500,000.

Agriculture.—The appropriations for the Department of Agriculture for 1932 carry approximately \$56,740,000 in excess of the appropriations for the current fiscal year 1931. The major portion of this increase of \$51,500,000 is for the construction of roads in the Federal highway system and for forest roads and trails. Other increases are \$2,000,000 for agricultural research work; \$2,440,000 for service work for the general public, including the Weather Bureau service, and \$800,000 for enforcement of regulatory laws.

Treasury Department.—In the appropriation for the Treasury Department for the fiscal year 1932 the principal item of decrease from the appropriations for the fiscal year 1931 is \$92,000,000 for refunding taxes illegally collected. On the other hand the principal items of increase over 1931 are \$10,300,000 pertaining to the construction of public buildings and \$1,000,000 for the Customs Service. In total, the estimates for the Treasury Department for 1932, compared with the appropriations for 1931, show a decrease of \$78,342,000. This, however, is only an apparent reduction in so far as amounts available for expenditure within the respective fiscal years are concerned. The appropriations for the Treasury Department include a number of double-year and no-year items. It is estimated that the result of operations under these appropriations will be a reduction in expenditures in 1931 of \$30,000,000, and an increase in the amount available in 1932 of \$59,400,000. On this basis the amount available in 1932 will be over \$11,000,000 in excess of 1931.

DISTRICT OF COLUMBIA

For the municipal government of the District of Columbia there is appropriated \$47,796,000, which is a decrease of \$601,000 from the appropriations for 1931. However, the 1931 appropriations provided \$3,000,000 for the purchase of land and \$65,000 for the preparation of plans and designs

VII. PUBLIC FINANCE AND TAXATION

of buildings for the municipal center, which are non-recurring items. Deducting these amounts, the estimate for 1932 is \$2,465,000 in excess of the appropriation for 1931. It may be added that the estimate for 1932 does not contain any amount for commencing actual construction for the municipal center for the reason that the preparation of plans, designs, and estimates of cost have not progressed to a point which permits of a limit of total cost being expressed in the estimate. The Commissioners of the District of Columbia believe that approximately \$1,500,000 will be required to commence construction work and they are reserving that amount from the estimated revenues of the District of Columbia.

GOVERNMENT-OWNED BUILDINGS

Construction Program.—The progress made by the Treasury Department under the program to house Federal activities in Washington and throughout the country in Government-owned buildings has been greatly accelerated during the past year by a considerable enlargement of the program, expedition in acquiring sites, and the removal of restrictions on the employment of outside architectural services. The original Public Building Act of May 25, 1926, authorized the expenditure of \$15,000,000, in addition to sums already provided, for the completion of 69 projects authorized prior to 1926. It also authorized the expenditure of \$50,000,000 for buildings in the District of Columbia, and \$100,000,000 for the country at large. An act approved Feb. 24, 1928, amended the original act by increasing the authorization for buildings outside the District of Columbia \$100,000,000. A recent act, approved March 31, 1930, further amended the two prior acts by increasing the District of Columbia program for construction \$100,000,000, and the program outside the District, \$115,000,000. The purchase of additional land in the District of Columbia at an aggregate cost of \$40,000,000 has also been authorized. The total public buildings program, under pres-

ent authorizations, amounts to \$520,000,000, to which should be added whatever amounts are derived from the sale of obsolete sites and buildings.

Authorizations.—In furtherance of the purposes of this legislation specific authorizations have been made for 535 projects at limits of cost aggregating \$378,560,000. To finance the projects, on the basis of providing for maturing obligations, appropriations have been made to the amount of \$149,586,000. The total expenditures to October 31, 1930, amount to \$77,027,625.80, of which \$8,481,550.29 is chargeable to authorizations prior to 1926, leaving a balance available for further expenditure of \$72,558,379.09. The amount which will be expended during the remaining eight months of the current fiscal year is estimated at \$56,000,000. The appropriation balance then remaining, added to the \$60,000,000 carried in this Budget, will permit of expenditures somewhat in excess of \$76,500,000 during the fiscal year 1932. The expenditure program for the 20-month period from Nov. 1, 1930, to June 30, 1932, amounts to upward of \$132,500,000.

The War Department is also carrying forward a building program, involving an ultimate expenditure of about \$160,000,000, for the housing of military personnel and utilities, made necessary by the need for replacing World War temporary construction and to provide generally for the increase in the pre-war strength of the Regular Army.

NATIONAL DEFENSE

Total Appropriation.—The appropriations for the War and Navy Departments for 1932 provide a total of \$689,084,000 for national defense. This is exclusive of all items of a non-military character and is a decrease under the appropriations for this purpose for 1931 of \$33,697,000.

War Department.—The decrease for the War Department amounts to \$751,000, which amount is the net result of increases and decreases in many items based on the different

NATIONAL EXPENDITURES AND REVENUES

requirements for the two fiscal years involved.

Navy.—The decrease for the Navy Department is \$32,946,000. Due to the ratification of the London treaty, the operating force program of the Navy was revised to provide for a reduction in the enlisted force and a reduction in the number of vessels to be retained in commission. These changes involved a reduction in the estimated requirements for 1932 of approximately \$7,000,000. However, with a fleet much reduced in number of vessels, provision is made for 1932 for a reasonable increase in the enlisted complement of vessels and for relative increases in the items connected with the maintenance, repair, and operation of vessels, with the view that the efficiency of the personnel and of the vessels of the smaller active fleet may be further increased. After providing for these and other increases, the net decrease for ordinary operating expenses is \$4,446,000. The decrease for modernization of battleships is \$7,400,000, appropriations having previously been made to complete the modernization of all vessels so far authorized. For construction of vessels the decrease is \$21,100,000. A large unexpended balance accrued under the appropriations for ship construction because of the delay in the program pending the result of negotiations for modification of the Washington treaty. The construction of those vessels authorized which are permitted by the London treaty should now go forward without delay. The cash withdrawals for new ship construction during 1932 is estimated at \$51,600,000.

Air Service.—There is appropriated for the air services of the Army and Navy, including their civilian components, a total of \$29,361,000 for the procurement of new airplanes, their engines, spare parts, and accessories. There is also appropriated \$277,000 for similar purposes for the Coast Guard, Department of Commerce, and the National Advisory Committee for Aeronautics. These two sums contemplate the procurement of a total of not less than 787 airplanes. In addition to the

amounts which we are spending for the acquisition of aircraft we are also spending large sums for lighting and equipping airways, for the inspection and licensing of commercial planes and pilots, and furnishing weather reports necessary to the carrying on of aerial navigation. For these purposes \$10,375,000 is included in the estimates of the Department of Commerce and \$1,760,000 in the estimates of the Weather Bureau of the Department of Agriculture. It is estimated that by the end of the fiscal year 1932 there will be about 19,500 miles of airways lighted and equipped.

RIVERS AND HARBORS, AND FLOOD CONTROL

The estimates show an increase of \$5,000,000 for the maintenance and improvement of existing river and harbor works over the annual appropriation for the current fiscal year. In addition to this increase the amounts for 1932 show a further increase of \$4,680,000 over the estimates for 1931 in the funds required to meet the requirements of rivers and harbors and flood control under authorizations of law covering permanent specific and indefinite appropriations, advances, and contributions. The total for rivers and harbors and flood control is \$108,553,000, of which \$71,703,000 is for rivers and harbors and \$36,850,000 for flood control.

EXPENDITURE AND REVENUE COMPARISONS

1930 Fiscal Year.—The fiscal year 1930 closed with an actual surplus of receipts over expenditures of \$183,789,214.90 as against an estimated surplus as contained in the Budget for 1931 of \$225,581,534. The latter figure, however, did not reflect the effect of the temporary reduction in income taxes recommended in that Budget and which it was estimated would exceed \$80,000,000 during the fiscal year 1930. As a matter of fact, the actual receipts during the fiscal year 1930 were about \$71,000,000 less than the estimate contained in the 1931 Budget. This was partially offset by a net reduction in expenditures of \$29,500,000 below those estimated

VII. PUBLIC FINANCE AND TAXATION

in the 1931 Budget. This net reduction consisted of various increases and decreases, including about \$74,000,000 decrease in the reduction of the public debt on account of certain foreign interest payments being made in cash instead of in securities as had been anticipated.

Fiscal Year, 1931.—For the current fiscal year, 1931, there has been a material change in our financial situation as now estimated compared with the estimates presented in the 1931 Budget. At that time it was estimated that the receipts would total \$4,225,727,666 and the expenditures \$4,102,938,700, which forecasted a surplus of \$122,788,966. The surplus estimated did not reflect the effect of the temporary tax reduction recommended in that Budget which it was anticipated would cause a reduction of over \$75,000,000 in the receipts for the fiscal year, 1931. Therefore, with this adjustment the surplus estimated at this time last year would have been about \$45,000,000.

Revenue Drop.—Due to the depression the income of the Government in taxes and in postal receipts for 1931 fell below the anticipation by over \$430,000,000. Moreover, the measures taken to increase employment by the expansion of construction activities in the Government under the authorization of Congress, together with other items of increase, including the increase in veterans' services enacted by Congress, represent a very material increase in Government expenditures of over \$225,000,000.

The Deficit.—This would indicate a change in the situation from the estimates of the last Budget of nearly \$655,000,000. This large sum, however, is partially met by the application of \$185,000,000 of interest payments on the foreign debt to current expenditures and by arrangements of the Federal Farm Board by which they reduced their net cash demands upon the Treasury by \$100,000,000 during this period. These sums, together with economies brought about in the Government, reduce the practical effect of the change in the finan-

cial situation to a deficit of approximately \$180,000,000.

Taxes.—The estimate of receipts for 1932 is predicated on the existing income tax law. The Congress granted a substantial reduction in tax rates upon incomes of the calendar year 1929. The present outlook for heavy decrease in probable income and the necessity to increase public works and aid to employment does not warrant the continuation of the reduction at the present time. The difference in revenue between the tax rates upon incomes authorized for the calendar year 1929 by the joint resolution approved December 16, 1929, and the rates specified in the revenue act of 1928 is approximately \$160,000,000. If our expected revenues for 1932 were reduced by this amount a deficit for 1932 as well as 1931 would now appear to be inevitable. I am confident that the sentiment of the people is in favor of a balanced Budget. I am equally confident that the influence on business of having the financial affairs of the Federal Government on a sound basis is of the utmost importance.

PRESIDENT HOOVER'S CONCLUSIONS

"For the fiscal year 1932 the favorable margin between our estimated receipts and estimated expenditures is small," says President Hoover. "It will not take much to exhaust the expected surplus. In fact, it is inevitable that some portion, and perhaps a considerable portion, of it will be required to meet the settlement of judgments and claims and the cost of other contingencies or emergencies which cannot now be foreseen. On the receipt side credit has been taken for all revenue that can reasonably be anticipated. In the expenditure statement there have been covered the amounts which reasonably can be estimated as necessary to meet the obligations of the Government under present law. This is not a time when we can afford to embark upon any new or enlarge ventures of Government. It will tax our every resource to expand in directions providing

THE NATIONAL BUDGET

employment during the next few months upon already authorized projects. I realize that, naturally, there will be before the Congress this session many legislative matters involving additions to our estimated expenditures for 1932, and the pleas of unemployment will be advanced as reasons for many new ventures, but to reasonable view of the outlook warrants such pleas as apply to expenditures in the 1932 Budget. I have full faith that in acting upon these matters the Congress will give due consideration to our financial outlook. I am satisfied that in the absence of further legislation imposing any considerable burden upon our 1932 finances we can close that year with a balanced Budget. When we stop to consider that we are progressively amortizing our public debt,

and that a balanced Budget is being presented for 1932, even after drastic writing down of expected revenue, I believe it will be agreed that our Government finances are in a sound condition."

GOVERNMENT BORROWING

The economic situation has meant a considerable decrease in revenue and the Federal treasury has resorted to borrowing to make up the deficit. In September \$800,000,000 in 24-year 3 per cent bonds were issued, in addition to \$300,000,000 in twelve-month 1½ per cent certificates. In June another \$800,000,000 was borrowed and another \$500,000,000 was borrowed in March. From these figures it is evident that the year will not mark the customary decrease in Federal indebtedness.

THE NATIONAL BUDGET

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THE PRESIDENT'S BUDGET FOR 1932

Deficit.—President Hoover's budget for 1932, covering the fiscal year beginning July 1, 1931, was prepared under conditions which had vastly changed from those of the previous year. When this budget was in the course of preparation during the fall of 1930, it was quite evident that there would be a large falling off in the revenues of the fiscal year then current, that instead of a surplus of \$122,000,000, as forecast in the 1931 budget, there would be a deficit. This deficit was estimated at \$180,000,000 in the 1932 budget. It was the first time in the post-war period that the government had been faced by a situation of this kind.

Budget Message.—In his budget message to Congress on Dec. 3, 1930, explaining the 1932 budget, President Hoover took the stand that a "moderate deficit for the current fiscal year, which, in fact, amounts to less than 5 per cent of the total government

expenditure" was a matter of no great concern. He said it was primarily due to the worldwide depression, accentuated by the expenditures which were necessary because of relief measures at home. He did not look with favor on any attempts to meet this deficit by a reduction of the statutory debt redemption requirements of some \$440,000,000 per year. He said the deficit could be met by reducing the general fund balance as of the beginning of the year, supplemented by temporary borrowing. He thought any temporary borrowing could be absorbed with the recovery of the economic situation, since during the previous eleven years large surpluses had yielded nearly \$3,500,000 for debt retirements. President Hoover anticipated that Congress would appropriate additional amounts beyond the budget recommendations to take care of unemployment and the drought situation. While this would increase the deficit,

VII. PUBLIC FINANCE AND TAXATION

he thought it could be met by temporary borrowing. He proposed that the reduction in income taxes, which had been adopted for the calendar year 1929, should be discontinued for the calendar year 1930. This, he estimated, would provide approximately \$160,000,000 toward wiping out the anticipated deficit. He insisted that it was not the time for Congress to embark on any new or enlarged ventures. He expressed a hope that due consideration would be given to the financial outlook.

THE BUDGET ESTIMATES

President Hoover's expenditure proposals for 1932 totaled \$4,667,845,468.07, which included \$735,003,057 estimated payable from postal revenues. This total topped the previous year's appropriations by more than \$230,000,000. In arriving at the condition of the treasury at the close of the budget year, or June 30, 1932, the President used figures from the annual report of the Secretary of the Treasury which were not readily comparable with those set forth in the budget summary. These figures showed an estimated total net receipts, exclusive of postal revenues, for 1932 of \$4,085,119,927, and an estimated total net expenditures, exclusive of postal expenditures, of \$4,054,519,200. This gave an excess of receipts over expenditures of \$30,600,727, as of June 30, 1932. The use of a different set of figures to arrive at the year's balance was explained as being due to the segregation of trust funds from general and special funds. However this may be, the result was unsatisfactory from a budgetary standpoint, and likely to produce confusion in the mind of anyone who attempted to analyze the figures thus presented.

Another perplexing thing about President Hoover's estimates of expenditures in his 1932 budget was the great transformation which they underwent before the end of the congressional session on March 4, 1931. Although he had counseled economy in his budget message at the opening of Congress in December, his estimates were actually increased over the original figures by about 11.5 per

cent, or \$540,047,755.24. The final figures, as reported in the *Congressional Record* (March 16, 1931, page 7515), were as follows:

Agriculture.....	\$ 213,919,040.00
District of Columbia....	45,843,517.00*
Independent offices.....	1,055,358,190.00†
Interior.....	69,588,741.73‡
Legislative.....	28,690,611.00
Navy.....	361,173,248.00
State.....	17,590,073.34
Justice.....	51,988,261.00
Commerce.....	54,635,226.00
Labor.....	14,437,400.00
Treasury.....	255,436,296.00
Post Office.....	848,844,057.00
War Department:	
Military activities....	338,933,359.00
Non-military.....	111,414,532.00

Total, regular annuals.....	\$3,467,852,552.07
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First deficiency, 1931....	\$ 95,882,528.62
Second deficiency, 1931..	79,986,802.62
Emergency construction appropriations, 1931..	150,000,000.00
Farmers' seed, feed, and fertilizer loans.....	45,000,000.00
Agricultural marketing fund.....	150,000,000.00
Miscellaneous.....	5,200,671.00

Total, deficiency and miscellaneous.....	\$ 526,070,002.24
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Permanent and indefinite appropriations.....	\$1,213,970,669.00
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Grand total.....	\$5,207,893,223.31
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* Exclusive of \$196,030 transferred to Interior Department.

† Exclusive of \$2,000,000 withdrawn by President after the Budget was submitted to Congress.

‡ Includes \$196,030 transferred from District of Columbia.

CONGRESSIONAL ACTION ON THE BUDGET

General.—The above expenditure estimates enabled Congress to appropriate a great deal more than the anticipated income of the government and still not exceed the President's figures. No serious attempt seems to have been made to balance the national budget after the original estimates were submitted in December, although a marked decline in the nation's revenues was apparent even before Congress adjourned. This method of budgeting is not to be commended either on the part of the executive or of Congress. If it is continued, many of the prospective benefits of the national budget system will be lost.

Appropriation Bills.—Most of the regular appropriation bills were introduced in the House by the end of December. The last one to be introduced was the second deficiency bill, which reached the House on February 18. The bills were acted on rather expeditiously by the House. The Senate, however, did not bestir itself on these measures until after the first of February. But within a fortnight it had removed most of them from its calendar. Several conferences had to be held between the two houses in order to smooth out differences of opinion. These were adjusted and all the departmental bills, except the Navy Bill, had been approved by the President on or before Feb. 23. The Navy Bill came through a week later with a Senate amendment carrying \$30,000,000 for the modernization of three battleships to which the House agreed. The second deficiency bill was held over by the Senate until practically the end of the session, so that items might be inserted in it at the last minute. On the whole Congress had fairly smooth sailing on the regular appropriation bills; the fights came on the relief and other measures.

Relief Measures.—On Dec. 4, President Hoover sent a special message to Congress proposing an appropriation of \$150,000,000 to be distributed under his direction among the Federal departments as an emergency fund for accelerating public works construction. Of this proposed fund, \$80,000,000 were to be expended on the Federal aid highway system, and about \$57,000,000 by the War Department. The House Committee on Appropriations reduced the President's proposal to \$110,000,000, and then voted the proposal. In the Senate, it was amended by adding \$8,000,000 and eliminating the power of the President to make the distribution. The measure was debated for some time in conference, when it was reduced to \$116,000,000 and distribution by the executive restored. It then became coupled with a drought relief measure appropriating \$60,000,000, which certain members of the

Senate had been sponsoring. The House reduced this amount by 50 per cent and a conference committee raised it to \$45,000,000. Both houses approved this figure by joint resolution, this action being taken before the President's measure was allowed to come up for final approval on Dec. 20.

Considerable wrangling took place in Congress on the drought relief measure providing loans to farmers before an appropriation was finally made on Jan. 15 to carry out the purpose of the joint resolution. The President's relief policies were severely criticised by the Senate. An attempt was made to add \$15,000,000 for food and supplies for the farmers in the drought-stricken areas. This caused the President to appeal to the people of the country to contribute for this purpose a fund of \$10,000,000 to be administered by the Red Cross. Thereupon the proposed amendment failed, and an appropriation of \$45,000,000 was passed. Subsequent attempts were made in Congress to appropriate as much as \$25,000,000 for food and supplies, but these failed.

Bonus Loan Act.—Early in the session a bill was introduced in Congress calling for the issuance of bonds to pay off immediately the adjusted service certificates held by World War veterans, which ordinarily would be due in fourteen years. On Jan. 28, Secretary Mellon appeared before the Senate Finance Committee and testified that it would cost approximately \$3,400,000,000 to pay off the service certificates. He expressed grave doubt that such a large amount of bonds could be disposed of without disrupting the security markets of the country, thus affecting not only the credit of the government but also the entire economic structure. "Coming at this time," he said, "such action would seriously retard a business recovery, and so prolong unemployment, which today is bringing misery and want to so many of our fellow countrymen."

The bill was revised to provide for a loan value on the service certificates up to 50 per cent of their face value.

VII. PUBLIC FINANCE AND TAXATION

Since the face value was \$3,440,000,000, Secretary Mellon estimated that this proposal established a potential liability of \$1,720,000,000. He said that the proportion of the loans which the veterans would demand could not be determined exactly, but he thought that approximately \$1,000,000,000 would be necessary. He urged that the measure be reconsidered in view of the fact that a half billion dollar deficit was indicated at the end of the fiscal year. However, the bill passed the House Feb. 16 by an overwhelming majority, and four days later it passed the Senate by a large vote in the face of a threat from the President to veto the measure. On Feb. 26, President Hoover sent a message to the House, vetoing the bill, in which he touched on the financial aspects of the bill and indicated that it was unwise not only from the standpoint of the veterans but also of the country as a whole. No sooner had the message been read than the House took a vote which resulted in more than the necessary two-thirds required to override the veto. The following day the Senate also voted 76 to 17 to override the veto.

Muscle Shoals Bill.—Congress passed a joint resolution providing for government operation of the Muscle Shoals properties in the distribution of power and the manufacture of fertilizers. It was estimated that this would require an immediate outlay of \$100,000,000 to put the properties in shape for operation. President Hoover vetoed this resolution on March 3, his major objections being the cost of the project, its impracticability, and government operation of industry in competition with private interests. Congress was unable to marshal the required votes to override his veto.

Tax Refunds. — Representative Garner of Texas again attacked the Treasury on its practice of refunding income taxes. He claimed that during the past fourteen years some \$3,450,000,000 had been refunded instead of \$1,254,000,000 as reported by the Treasury. At the end of 1930 a list of tax refunds from the preceding fiscal year was given out by the

Treasury Department. This list showed a total of \$126,836,333.22 paid, with additional interest amounting to \$37,971,711.75, making an aggregate for the refunding operations of \$164,808,044.97. Secretary Mellon defended the system of making refunds through the administration of the Treasury Department, instead of resorting to the courts. He said: "To compel the taxpayer to resort to the courts to obtain refunds of amounts admittedly overpaid would not only be unfair, but would be detrimental to the effective administration of the revenue laws."

Taxation.—Throughout the session, Congress remained unalterably opposed to any changes in the tax system, although it was apparent that the government would be faced by a large deficit at the end of the current fiscal year. It approved the President's recommendation on the discontinuance of the income tax reduction, and permitted the rates to go back on the original basis, applicable to incomes of the calendar year 1930. So far as Congress was concerned, the Treasury was left to borrow in making ends meet.

Summary of Appropriations.—In summarizing the appropriations at the end of the session on March 4, 1931, Senator Jones, chairman of the Appropriations Committee, seemed rather proud of the fact that the Seventy-first Congress, covering the first two years of the Hoover administration, had appropriated a total of over \$10,000,000,000, the greatest amount ever appropriated by any Congress. He said: "This country is growing and expanding. Governmental activities are broadening. Our appropriations must necessarily increase to keep pace with these developments. . . . There is no telling to what sublime heights our great country will attain. . . ."

The following table, based upon the figures presented in the *Congressional Record* for March 16, 1931, shows a summary of the appropriations made by the third session of the Seventy-first Congress, which ended March 4, 1931.

THE NATIONAL BUDGET

SUMMARY OF APPROPRIATIONS BY SEVENTY-FIRST CONGRESS

Title of Act	Appropriations
<i>Regular Annual Acts</i>	
Agriculture.....	\$ 215,578,860.00
District of Columbia....	45,672,838.00
Independent Offices.....	1,052,777,010.00
Interior.....	89,247,606.73
Legislative.....	26,973,185.00
Navy.....	358,253,952.00
<hr/>	
State, Justice, Commerce, and Labor.....	\$ 137,423,954.34
<hr/>	
State.....	\$ 17,522,323.34
Justice.....	51,239,201.00
Commerce.....	54,332,230.00
Labor.....	14,330,200.00
<hr/>	
Treasury and Post Office.	\$1,083,148,923.00
<hr/>	
Treasury.....	\$ 241,865,146.00
Post Office.....	841,283,777.00
<hr/>	
War Department.....	\$ 445,765,735.00
<hr/>	
Military.....	\$ 334,655,965.00
Non-military.....	111,109,770.00
<hr/>	
Total, regular annual	\$3,454,842,064.07
<hr/>	
<i>Deficiency and Miscellaneous Acts</i>	
First deficiency, 1931....	\$ 109,303,822.12
Second deficiency, 1931..	83,990,967.05
Emergency construction, 1931.....	116,000,000.00
Agricultural marketing fund.....	150,000,000.00
Farmers' seed, feed, and fertilizer loans.....	45,000,000.00
Miscellaneous private re- lief and other acts..	7,000,000.00*
<hr/>	
Total, deficiency and miscellaneous acts...	\$ 511,294,789.17
<hr/>	
<i>Permanents and Indefinites</i>	
Agriculture.....	\$ 11,618,436.00
Commerce.....	3,000.00
Independent offices.....	91,036,621.00
Interior.....	15,952,500.00
Labor.....	9,000.00
Legislative.....	234,005.00
Navy.....	1,839,470.00
Post Office.....	200,000.00
State.....	141,233.00
<hr/>	
Total, permanents and indefinites..	\$1,213,970,669.00
<hr/>	
<i>Treasury:</i>	
Interest on the public debt.....	\$ 581,000,000.00
Sinking fund and other public debt retire- ment funds.....	468,509,905.00
Ordinary permanents and indefinites.....	25,860,084.00
<hr/>	
Total, Treasury..	\$1,075,369,989.00

War Department:

Military activities....	\$ 1,375,900.00
Non-military activities	12,929,515.00
<hr/>	
Total, War De- partment.....	\$ 14,305,415.00
<hr/>	
District of Columbia....	\$ 3,261,000.00
<hr/>	
Grand total.....	\$5,180,107,522.24

* Estimated.

EXECUTION OF THE BUDGET

Growth of the Deficit.—During the execution of the 1931 budget, beginning July 1, 1930, and ending June 30, 1931, the condition of government finances changed for the first time in recent years from one of surplus to one of deficit. Starting the period with a comfortable surplus of \$183,000,000 in round figures, the government closed it with a deficit of \$902,716,000, which is reported to be the largest in our history except for two years during our participation in the World War and the last year of the Civil War. The total revenue for 1931 was \$3,317,000,000, or the smallest of any year during the post-war period.

The huge size of the deficit of 1931 was not anticipated either by the administration or by Congress. Revenue receipts fell off at a more rapid pace than any of the government's financial experts thought possible, while expenditures were pushed to the limits of appropriations mainly in an effort to meet the gathering force of the depression. Efforts to balance income and outgo during the months of 1931 were practically thrown to the wind. Much the same psychology maintained in official circles as is found in times of war or widespread pestilence.

In his budget message of December, 1930, the President presented the figures of the Treasury which indicated a deficit on June 30, 1931, of about \$180,000,000. At that time Secretary Mellon went so far as to predict an increase in revenues, particularly from income and corporation taxes. Congress then started making appropriations by hundreds of millions for emergency relief and other purposes. Many of these were in

line with the President's recommendations. By February, Secretary Mellon got somewhat uneasy about the situation and stated before a congressional committee that the deficit for 1931 would reach \$375,000,000. Before the end of March, Treasury experts saw indications that the deficit might reach \$700,000,000 by the close of the fiscal year. The income tax returns at this time showed a large decrease, well over \$130,000,000. Shortly after the first of April an \$800,000,000 deficit was forecast. This created a stir among some congressmen, who began to discuss the necessity of tax increases when the new Congress assembled in December, 1931. Early in May, it appeared that the deficit might reach a \$1,000,000,000 or even more. This caused *The New York Times* of May 5, to comment editorially on a "Billion Dollar Deficit" to the effect that it "undoubtedly came with something of a shock," and to assume a rather critical attitude toward the Treasury estimates which had been given out from time to time as not doing "credit to the government actuaries." This comment seemed more than justified by the train of events. The deficit actually proved to be over \$900,000,000, as indicated above.

Treasury Borrowings.—Early in March, 1931, the Treasury offered for sale \$1,400,000,000 of bonds and certificates. The bonds, amounting to \$500,000,000, were for twelve years, with 3% per cent interest; the certificates were in two groups, \$600,000,000 for twelve months at 2 per cent, and \$300,000,000 for six months at 1½ per cent. These offerings were oversubscribed two and a half times. On June 15, another issue of bonds was sold, amounting to about \$821,000,000. These were for periods of fifteen to eighteen years at 3½ per cent. On Sept. 15, a third issue of bonds and notes was sold. The bonds, amounting to \$800,000,000, ran from 20 to 24 years at 3 per cent. The notes, to the amount of \$300,000,000, were for one year at 1½ per cent.

In commenting editorially on the borrowing policy of the government,

the *New York Herald Tribune* for Sept. 1, said: "While borrowing may perhaps be justified as an expedient for meeting a temporary shortage in revenues, it can scarcely be regarded as either wholesome or dignified over any considerable period. Sooner or later, if we are to accept informed opinion that the present situation is chronic rather than a passing phenomenon, the question of bringing in greater revenues must be faced in earnest. . . ." In other words, extended efforts to balance the budget by borrowings cannot be justified under any scheme of sound financing. A deficit of over \$600,000,000 has resulted from July 1 to Nov. 1, 1931, according to Treasury reports. This represents only the first four months of the fiscal year 1932. Should this continue, a tremendous deficit will be piled up by the end of the fiscal year.

Economy Drives.—Beginning in April, 1931, President Hoover started economy drives in the various governmental departments. The department heads were instructed in a cabinet meeting to pare the expenditures. Surveys were made to ascertain where departmental savings might be effected. In May it was indicated that more than fifty obsolete army posts might be abandoned in the interest of economy. Postal economies were also sought. It was claimed that some \$38,000,000 could be saved in the Post Office Department. Several million dollars were regarded as a possible saving in the Department of Agriculture. Offsetting these prospective reductions in departmental costs was a potential loss of \$227,000,000 due to the stabilization operations in wheat and cotton by the Farm Board. So the problem was not as simple as it might seem at first blush.

By the middle of the summer, President Hoover became insistent in the matter of economy and issued instructions to the department heads by letter on July 19. He stated that the expenditures proposed for the fiscal year then current were in excess of those for the fiscal year ending June 30, 1931, in spite of all efforts at re-

PUBLIC DEBT OF THE UNITED STATES

duction. He said: "In view of the fact that our receipts are materially falling off from the amount estimated at the time of the preparation of the budget for 1932, and of a consequent large deficit indicated for the current fiscal year, I wish again to bring to your attention the seriousness of our financial situation and desire that you assure yourself that all those in your department are impressed with the urgent need for economies and postponements in view of this emergency." He called for estimates of expenditure needs to be furnished to the Bureau of the Budget by August 17. These were duly submitted, but

the departmental enthusiasm for economy seems to have been at a rather low ebb. It appeared, when the estimates had been compiled in the Budget Bureau, that a total reduction of only about \$25,000,000 had been indicated. This amount, of course, was merely a drop in the bucket toward bringing the expenditures of the fiscal year in line with the diminishing revenues. The incident, however, indicated pretty clearly one thing, namely, the inadequacy of the existing system of budgetary control in meeting a financial condition which has been growing progressively worse for several months.

PUBLIC DEBT OF THE UNITED STATES

By FRANCIS H. SISSON

VICE PRESIDENT, GUARANTY TRUST COMPANY OF NEW YORK

STATUS OF THE FEDERAL DEBT

First Increase in Twelve Years.

—For the first time in twelve years, the public debt of the United States increased during the fiscal year ended June 30, 1931. Not since the year 1918-19, when the Federal Government was still on a war-time scale of expenditures, had the Treasury failed to report a reduction. The total gross debt on June 30, 1931, stood at \$16,801,281,492, as against \$16,185,308,299 a year earlier. The increase during the year, amounting to \$615,973,193, canceled the greater part of the reduction effected in the preceding year, raising the amount of the debt to a level not far below the \$16,931,197,748 reported at the end of the year 1928-29.

Review of Debt Reductions.—

While the increase during the last fiscal year marked a distinct setback to the Treasury in its program of debt reduction, its true significance must be considered in connection with a longer-term view of the trend of the debt. On June 30, 1919, the debt reached a total of \$25,482,034,419. During the next eleven years, there was an unbroken series of reductions amounting, in the aggregate, to

\$9,296,726,120, lowering the debt to only 63.5 per cent of the peak figure. The increase in 1930-31 amounted to only 6.6 per cent of the aggregate reductions during the preceding eleven years and brought the total amount of the debt up to 65.9 per cent of that reported in 1919.

Treasury Deficit.—The principal cause of the increase in the debt was a sharp decline in Government revenues during the fiscal year, accompanied by a continued increase in expenditures, resulting in a deficit of \$902,716,845, as against a surplus of \$183,789,215 in 1929-30. Revenues reached a total of only \$3,317,233,494, as compared with \$4,177,941,702 in the preceding year. Income tax receipts amounted to \$1,860,394,295, which is 23 per cent below the total in 1929-30; customs receipts, totaling \$378,354,005, show a decrease of 36 per cent; miscellaneous internal revenue receipts were \$569,386,721, or about 10 per cent less than a year earlier; and miscellaneous receipts, at \$509,098,473, show only a slight decline. Altogether, the revenues received by the Government were 26 per cent smaller than in the preceding year.

**GOVERNMENT EXPENDITURES
AND REVENUES**

Analysis Payments.—The increase in expenditures, while not so sharp, was, nevertheless, an important factor in swelling the size of the deficit. Total expenditures amounted to \$4,219,950,339, as compared with \$3,994,152,487 in 1929-30. Payments on the debt totaled \$1,051,641,704, marking a substantial reduction. General expenditures, however, amounted to \$2,390,477,277, or nearly \$230,000,000 more than in the preceding year, while other expenditures reached a total of \$777,831,358, as against only \$618,212,336 in 1929-30. The increase in general expenditures resulted chiefly from higher appropriations for the War Department, the Veterans' Administration, and the Department of Agriculture, including emergency drought relief and highway construction to relieve unemployment. The principal causes of the increase in other expenditures were an additional appropriation for the Federal Farm Board and an advance appropriation of the 1932 installment for the veterans' adjusted service fund, paid in advance in order to help meet the cost of the increased loans to veterans provided for by Congress.

Causes of Revenue Decline.—On the side of revenues, the decline was clearly attributable to the business depression which reduced individual and corporate incomes, sharply restricted imports of commodities, and, to a lesser extent, curtailed the volume of domestic trade in those goods that are subject to internal revenue taxes. Conditions affecting revenues were the reverse of those that had existed during the greater part of the post-war period. Except for the depression of 1921 and the minor recessions in 1924 and 1927, the country had enjoyed a high degree of prosperity which increased public revenues and made it possible for Congress to enact a series of new revenue laws providing for sweeping reductions in tax rates without interrupting the process of retiring the debt. Federal tax rates were reduced in 1921, in 1924, in 1926, and in 1928. Ex-

emption from the individual income tax was raised to a point where 2,000,000 people were relieved of the payment of any income tax at all, and tax rates in all brackets were lowered. The so-called nuisance taxes were practically eliminated; the excess profits tax on corporations was repealed; and internal revenue taxes were reduced. Despite these revisions, the Treasury continued to report annual surpluses, which, in addition to the funds set aside by law for that purpose, were devoted to debt retirement. Furthermore, certain payments on account of foreign debts to the United States Government, which were not specifically set aside for debt reduction, were actually used for that purpose.

**THE PROBLEM OF THE TAX
SCALE**

Income Tax Adjustments.—It is recognized that the conditions which made possible the rapid reduction of the debt during the first post-war decade were, in some respects, abnormal. In the early post-war years, large retirements were effected from certain non-recurrent sources, of which the most important was the lowering of the cash balance of the general fund of the Treasury from a war-time to a peace-time basis. A more permanent source of debt reduction was the unbroken series of surpluses of receipts over expenditures. The income tax, which is now the main source of Federal revenues, was imposed in war-time and was originally intended to meet the extraordinary war-time requirements of the Treasury. With the passing of the war emergency, the lowering of the tax scale was promptly begun, but the process was carried on by stages, since there was no means of determining accurately in advance what scale of taxes would be found permanently adequate. The task of the Treasury was to feel its way back, as it were, to a peace-time basis of taxation.

Tax Rate Outlook.—It is clear that, for the time being at least, further tax reduction is out of the question. In addition to the deficit

reported for 1930-31, the Treasury faces a virtual certainty of an even larger deficit during the current fiscal year, unless tax rates are sharply increased. During the first four months of the year 1931-32, Treasury receipts amounted to only \$714,918,740, or \$252,789,444 less than in the corresponding period of the preceding year, while expenditures totaled \$1,389,494,701, showing an increase of \$238,718,263 above those a year earlier. These totals left a deficit for the first four months of the year amounting to \$674,575,961, as against \$183,068,254 in the first four months of 1930-31. Moreover, no payments were made into the sinking fund during the first four months of the current year, whereas a year ago such payments totaled \$65,000,000 during the same period. Altogether, therefore, the net position of the Treasury at the end of the four months may be regarded as having been about \$557,000,000 below that a year earlier. At the time of writing, no recent official estimates are available, but private estimates indicate that a deficit of \$2,000,000,000 or \$2,500,000,000 is likely to be shown at the end of the current fiscal year, unless receipts are increased by an upward revision of tax rates in the meantime. The continued excess of expenditures over receipts in the first four months of the current fiscal year was accompanied by a further increase in the public debt amounting to \$490,433,000. The gross debt on October 31, 1931, totaled \$17,291,714,000, showing an aggregate increase of \$1,106,406,000 from the low figure reported at the end of the fiscal year 1929-30.

Budget Considerations.—It is realized, of course, that the present low level of Treasury receipts is as abnormal as were the high totals reported for some years preceding. The problem now facing the Government is that of determining whether, over a long period, the present tax scale is sufficiently high to balance the budget. Government officials are naturally reluctant to impose higher taxes at a time of depression. At the same time, it is realized that the

present condition of the Treasury cannot be allowed to continue. Although the Administration made no official statement of its tax policy during the early months of the current fiscal year, several influential members of Congress expressed themselves as definitely favoring an upward revision of taxes, either through an increase in income tax rates or through the enactment of some form of sales tax.

PUBLIC DEBT RETIREMENT

Effect of Hoover Moratorium.

—The unfavorable outlook for Federal receipts during the current fiscal year is partly due to the moratorium declared last summer on all inter-governmental debt payments. This agreement will reduce the receipts of the Treasury for the year by about \$250,000,000. The sum is not large in comparison with the Federal budget totals, and is, moreover, payable, with interest, in instalments covering the next ten years. The financial crisis in Europe, however, has forced the United States Government to modify, in some respects, its position with respect to the war debts, and has created doubt in some minds as to whether the scale of payments provided for in the existing agreements will be maintained. If it should become necessary or desirable to accept important downward revisions in the debt agreements, the effect on the public debt of the United States, over a term of years, would be very substantial. Although the law sets apart for debt retirement, only repayments of principal of those foreign debts that represent cash loaned under the Liberty Loan acts, all payments under the debt agreements have a direct or indirect influence on the rate of public debt retirement, since payments not directly devoted to debt reduction go into the general fund of the Treasury and affect the amount of the surplus or the deficit for the year.

Retirement Program.—The program of debt retirement adopted by Congress in 1920 contemplated the virtual extinction of the debt in

twenty-four years. This program was based on the division of the debt into two parts, roughly one-half of the total representing borrowings for the Government's expenditures in the war and the other half representing borrowings to lend abroad. A sinking fund was created with a view to retiring the amount of domestic borrowings in twenty-four years, and it was expected that repayments by foreign governments would cover the remaining portion. The funding agreements subsequently adopted spread the foreign repayments over a much longer period, and now it is questionable whether even those payments will be maintained.

The Sinking Fund Factor.—Of the various sources of debt reduction during the last decade, therefore, all those except the sinking fund have, for the time being, disappeared. While budget deficits will not be allowed to continue indefinitely, it is the announced purpose of the Government to maintain the budget in as nearly a balanced condition as possible, rather than to achieve a series of annual surpluses to be devoted to debt retirement, as has been done during the last decade. In view of the uncertainty now prevailing with respect to the war debts, it is idle to speculate on the outlook for retirement of that portion of the public debt corresponding to the loans to foreign governments. Consequently, the sinking fund remains as the only definite and constant factor in the situation.

INTER-ALLIED DEBTS

The Moratorium.—The most important developments in connection with foreign debts to the United States Government since the funding agreements were reached with our largest debtors occurred during 1931. On August 11, official acceptance was given to President Hoover's proposal for a year's moratorium on war debts and reparations. The suspended payments are to be paid in ten equal parts during the period from July 1, 1933 to July 1, 1943. Three per cent interest is to be paid on these suspended payments; and it is speci-

cally stated that these obligations are to be regarded as absolute, with no option of postponement. It is estimated that during the year's operation of the moratorium, the United States sacrifices approximately \$257,000,000 due from other countries; France makes a net sacrifice of about \$175,000,000, and Great Britain about \$80,000,000. Germany, of course, is the chief beneficiary, with no sacrifice and about \$427,000,000 in savings.

Hoover-Laval Statement.—The possibility of a continuation of the period of suspension was summed up in the joint statement issued by President Hoover and Premier Laval of France, following their conference at Washington during October, 1931. That part of the statement which referred to international debts reads as follows: "In so far as intergovernmental obligations are concerned, we recognize that prior to the expiration of the Hoover year of postponement some agreement regarding them may be necessary covering the period of business depression, as to the terms and conditions of which the two governments make all reservations. The initiative in this matter should be taken at an early date by the European powers principally concerned within the frame-work of the agreements existing prior to July 1, 1931."

Debt Reduction Prospects.—While there is every likelihood of some modification of the present moratorium agreement, the possibility of a cancellation or reduction of the foreign debts to the United States Government is perhaps as obscure as ever. In the annual reports of the Treasury Department, the Secretary of the Treasury, from time to time before the world-wide depression, expressed viewpoints that strongly suggested a discouragement of the idea that these debts would either be cancelled or reduced in the future. It was brought out that the United States had already been very liberal in its agreements with the debtor nations, considering the ability to pay in each case and the difference in the value of the dollar at

the time the loan was made; that the assumption is reasonable that the war debts are owed essentially to the American people, and that the American taxpayers must make up every dollar that is not paid; and that, in the interest of the sanctity of international obligations, these debts should be paid, since otherwise the foundation for any similar international borrowing in the future would be seriously weakened. Nevertheless, during the last several months of depression, statements have been made by some Government officials that might be interpreted as indicating the possibility of ultimate reduction of these debts. On June 20, 1931, President Hoover stated that he did not approve of the cancellation of these debts, but that, since the basis of the settlement of these obligations was the capacity under normal conditions of the debtor to pay, we should take into consideration the abnormal situation existing in the world. The President's recent statements regarding the debts have been interpreted in many ways, and there are some who believe that he is opposed to any reduction without any accompanying reduction in armaments of the debtor nations.*

Present Status of War Debts.—

An idea of the present status of the debts may be gained from the complete table of funded and unfunded indebtedness of foreign Governments to the United States, as of November 15,

*For details of the principal foreign debt agreements see THE AMERICAN YEAR BOOK for 1926.

1930, which appears in the *Annual Report of the Treasury for 1930* (Page 608). It should be noted that the Treasury received, during the fiscal year 1930-31, a total of \$51,588,133 on account of principal, and \$184,474,622 on account of interest, on the debts of foreign governments. All of the settlements represent a more or less liberal interest policy. In the agreement with Greece, no mention of interest rates whatever was made, while an additional loan of \$12,167,000 was granted to that country at an interest rate of 4 per cent. At the completion of the fiscal year ended July 1, 1931, of the twenty countries to which this country made advances on account of the war financing, funding agreements had been completed with fifteen. Of the remaining five, Cuba and Liberia had paid off their obligations; Nicaragua had made substantial headway in wiping out its obligation without any funding agreement, while Russia and Armenia had no governments recognized by the United States. Aside from the year's suspension of the payments on these debts and the possibility of an extension of this suspension period, developments this year have not changed the status of these obligations. In connection with the belief of some that the Administration, in the interests of world-wide economic recovery, might favor a revision of the present debt agreements, it must be remembered that any definite action along this line would have to receive the sanction of the legislative branch of our Government.

STATE FINANCE

By MERLIN H. HUNTER

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THE TAX SITUATION

General.—Two questions have been much discussed in every state,—how can expenditures be reduced and how can the revenue system be re-adjusted? The tremendous fall in personal incomes has made the tax bur-

den exceedingly heavy; hence the demand for economy and retrenchment in governmental activities. In governors' messages and in other public statements of officials no topic has been as much discussed as that of taxation.

Statements of Governors.—The following quotations from Governors give an indication of the importance attached to the tax situation by these officials. Governor Hunt of Arizona: "The limit of the ability of the taxpayer has been reached." Adams of Colorado: "Excessive taxes are a contributing factor in depression." Russell of Georgia: "Taxation problems cannot be solved by voting new taxes." Ross of Idaho: "taxation has become an almost unbearable burden." Leslie of Indiana: "Taxation is the state's most serious economic problem." Turner of Iowa: "Nothing less than a thorough revision of the entire tax system will meet with the approval of the people." Woodring of Kansas: "The defects of our tax system are too glaring to go uncorrected." Brucker of Michigan: "The tax problem has reached grave proportions and challenges our first concern and our soundest judgment." Bryan of Nebraska: "The taxpayers have a right to complain of the constant increase in the cost of government in this state." Larson of New Jersey: "What we want is less taxes." Seligman of New Mexico: "Wise business men should strenuously oppose high taxation which, sooner or later, amounts to confiscation." Hartley of Washington: "We have wrestled with the subject from every angle and chaos still reigns." LaFollette of Wisconsin: "Shifting a portion of the burden to those with large incomes is more than justified."

Activities of Organizations.—The increased difficulty in meeting tax payments has led to the formation of many organizations to grapple with the problem of state finances as well as an increased interest in the problem by organizations already in existence. State Chambers of Commerce have many committees at work to find facts and make recommendations. State taxpayers associations are becoming more numerous and are increasing their activities. The Western States Taxpayers Association met in Reno, Nevada, Sept. 3—4, 1931 and had for its motto: "Retrenchment in Govern-

ment." Examples of state taxpayer associations are the Arizona Taxpayers' Association with its monthly publication, *The Arizona Taxpayers Magazine*; the Nevada Taxpayers' Association with its organ, *The Nevada Tax Review*; The Utah Taxpayers Association which publishes the *Utah Taxpayer*, and the California Taxpayers' Association with its monthly organ, *The Tax Digest*. The purpose of such associations is to discover facts and to enlighten the people concerning them.

Marked increase in interest in taxation has also been seen in governmental bodies. State tax commissions have been more active in an attempt to find solutions to fiscal problems. Special investigating commissions have been formed in many states to make a comprehensive study of problems to be accompanied by specific recommendations for reform. Special commissions have reported in Florida, Georgia, Illinois, Iowa, Maine, Massachusetts, Michigan, New Hampshire, New Jersey, North Carolina, Ohio, Tennessee, Vermont, and West Virginia.

Legislation.—The passage of revenue laws occupied a place of first importance in state fiscal systems. The legislatures of forty-four states were in regular session, and the problem of greatest concern in most of them was what could be done with the tax situation. Laws were passed which affected practically every phase of state finances. The clamor for reduction of taxes has shown its influence in some attempts to reduce expenditures. Legislation either made arbitrary reductions or provided for centralization of administration in the hope that this would effect economies and thereby lessen costs. In North Carolina, for example, the state has taken over the maintenance and construction of all roads as well as the responsibility of the entire support of six months of school. Michigan abolished the township road system and substituted county road systems. Centralization of responsibility is also seen in such legislation as the North

Carolina law which provides for a director of local government, who has entire charge of local indebtedness. The arbitrary reductions come in flat percentage reductions from previous budgets, in salary cuts, and in a forced reduction of the tax rate.

TATE REVENUE AND NEW TAX BASES

Sales and Commodity Taxes.—In periods when old forms of revenue appear to be insufficient there is considerable agitation for new tax bases. Important among these have been the sales tax in some form and taxes upon commodities. North Carolina imposed a tax upon the gross receipts of all wholesale and retail merchants. It is graduated according to the amount of sales, and is about $1/10$ of 1 per cent. Many states added tobacco to the list of taxable commodities or modified the already existing taxes. Ohio placed a tax of 1 cent on each 10 cigarettes. Texas levied a tax of \$1.50 per 1000 cigarettes to \$3.60 per 1000. Georgia increased the tax on cigarettes from 10 to 20 per cent of the retail price. Fourteen states placed some sort of levy upon oleomargarine and animal fat substitutes. The tax ranges from 5 to 15 cents a pound while the license fee ranges from \$1.00 to \$1,000 per year. In Nevada a levy was placed upon vending machines which runs as high as \$75 per month. Vermont levied a tax upon outdoor advertisements ranging from 50 cents to \$9.25 depending upon size.

Property Taxes.—Much discussion continues as to how to relieve property from its heavy tax burden. In some states the need for constitutional amendment is still being emphasized. The people of Georgia, Pennsylvania, Kansas, Idaho and Minnesota will vote upon some form of tax amendment at the next general election. By recent legislation Ohio has adopted a low rate tax on intangibles. Three different bases are used in rate determination: income yield, per cent; amount of property 2 to 3 mills; and taxable value of property,

1 to 5 mills. The nature of the intangible is to determine the rate which will apply. Kansas and Oregon have made changes in the intangible property tax. Legislation in a special session in Florida placed the maximum rate to be levied upon intangibles at 5 mills.

Income Taxes.—State income taxation continues to receive much attention, both as a means of securing additional revenue and as a plan to relieve property from a part of its tax burden. Within the year Idaho, Utah and Vermont levied income taxes for the first time while many other states made changes in the existing laws. In making changes, Missouri increased the rate on both corporate and personal incomes from 1 to 2 per cent which is to be effective if the new progressive rates of 1 to 4 per cent should be held unconstitutional. In North Carolina the rates were increased from $4\frac{1}{2}$ per cent to $5\frac{1}{2}$ per cent on corporations and from a range of $1\frac{1}{4}$ to 5 per cent on personal incomes to a range of 2 to 6 per cent. The start of the upper bracket was lowered from \$15,000 to \$10,000. In Oklahoma the maximum rate was increased from 2 to 5 per cent. In Wisconsin the rate was increased $\frac{1}{2}$ of 1 per cent in all brackets from \$3,000 to \$12,000 and 1 per cent in all brackets above \$12,000. In Oregon the rate upon corporate incomes was increased from 5 to 8 per cent. In Georgia the new rates range from 1 to 5 per cent for brackets of from \$5,000 to \$20,000. There is also a corporation tax of 4 per cent. New York, in special session, increased all rates 50 per cent, the increased receipts to be applied to unemployment relief.

Death Duties.—The Federal estate tax continues to exert an influence upon the inheritance tax used in the states. Florida has re-amended her constitution to permit taxes upon estates. Legislation took the form of an estate tax with rates the same as those found under the Federal estate tax. Credit, however, is allowed against the state tax for the amount paid to the Federal Government, so

VII. PUBLIC FINANCE AND TAXATION

the net result of the tax is to equal the 80 per cent Federal credit. Alabama has also joined the ranks of the users of this form of taxation. The rates are such as to take advantage of the credit under the Federal tax. Other states to modify the tax to take advantage of the Federal credit were Connecticut, Indiana, Minnesota, New Hampshire, Washington and Wisconsin. States which adopted complete reciprocity were Nebraska, North Dakota, and Florida.

Inheritance Taxes.—A few states made rather marked changes in the inheritance tax laws. In Indiana the exemption granted to a widow was reduced from \$25,000 to \$15,000 while in West Virginia the same exemption was increased from \$15,000 to \$25,000. In Delaware the exemption to the surviving spouse is increased from \$3,000 to \$20,000 while in Iowa the increase was from \$15,000 to \$40,000. Some increases in rates are also found in some states.

Corporation Taxes.—While corporate income is becoming more in favor as a basis for taxation, many other levies continue to be made, usually under the name of franchise taxes. Florida now requires all corporations to file a report with the Secretary of State, the filing fee to range from \$10 on \$10,000 capital stock to \$1,000 on \$2,000,000 capital stock. Florida public utilities which furnish light, heat, power, gas as well as telephone and telegraph companies are to pay 1½ per cent of gross receipts. All original issues of stock as well as all transfers of stock now bear a tax of 10 cents on each \$100 face value. Delaware, Maine, North Carolina, Ohio and Pennsylvania also made some changes in the franchise tax. Some changes may be noted in the method of taxing public utilities. States in which changes were made in rates of the existing systems are New Hampshire, North Carolina, Ohio, North Dakota and Wisconsin. Common carriers continue to come in for considerable discussion and legislation. Alabama, Colorado, Georgia, Kansas, Michigan, Pennsylvania and Wyo-

ming have levied excise taxes on common carriers in addition to the existing registration fees, gasoline taxes, etc. In Florida, Illinois, Nebraska, New Mexico, Ohio, South Dakota and Wisconsin the registration fee was increased. Air transport is being recognized as a taxable base by more and more states. Massachusetts has a license fee of \$3.00 for gliders. The registration fee for air craft in Michigan is 2½ cents per pound with a minimum of \$10 and a maximum of \$150. New Hampshire and Vermont have also provided for licenses upon air craft. Several states levy a tax upon the gasoline used in airplanes.

Gasoline Tax.—There has been no inclination on the part of the states to lessen their hold upon the lucrative source of revenue which they have in the gasoline tax. The tendency continues, on the other hand, to increase the rates. The following increases came from the recent sessions of state legislatures: Arizona, from 4 to 5 cents; Arkansas, 5 to 6 cents; Kansas, 2 to 3 cents; Maine, 4 to 5 cents; Massachusetts, 2 to 3 cents; Oklahoma, 4 to 5 cents; Tennessee, 5 to 6 cents; Utah, 3½ to 4 cents; Washington, 3 to 5 cents; and Wisconsin, 2 to 4 cents. Florida repealed the law which allocated 1 cent of the receipts from the gas tax to education.

Taxation of Chain Stores.—Chain stores have recently come into prominence as a possible source of revenue. Much attention was centered upon the Indiana tax, or rather the attitude the United States Supreme Court would take towards it. Both in the original case and in the rehearing the Court upheld the tax, and it will not be surprising if many states in the next sessions of their legislatures turn to this form of revenue. Some states did not wait for the final decision of the court but levied taxes at the recent sessions of the legislature. Alabama levies a tax of \$1.00 for one store from which the levy increases until it reaches \$75.00 for each store over 20. In Florida the tax varies with the number of stores and with the number of counties in which they

MUNICIPAL FINANCE

are located. The tax is \$5.00 upon one store and ranges to \$75.00 for each store over 50, if not all in the same county. In addition there is a tax of \$3.00 for each \$1,000 of stock carried in each store. Counties levy a license fee of $\frac{1}{4}$ the levy of the state while the cities are given the privilege of duplicating the county levy.

Taxation of Banks.—No settlement has been reached in the method of bank taxation. Few states made changes in the method of taxation, awaiting possible changes in Section 5219. There is still considerable agitation for change and it is possible some amendments may be adopted by Congress in the not distant future. Certainly pressure will be brought in that direction. For the next two years Minnesota has agreed to collect from state and national banks only $\frac{3}{4}$ of the tax really levied. Arizona, Iowa, Kansas, Michigan and Missouri made some changes in the basis of assessment. New York reduced the tax on savings banks from 1 per cent to $\frac{3}{5}$ of 1 per cent of the surplus and undivided profits. Vermont also made slight reductions in the taxes on national banks and savings banks.

STATE RECEIPTS AND EXPENDITURES

Comparisons between revenue receipts and governmental cost payments indicate whether a government

is paying its bills as it goes or whether it is practicing deficit financing. For the year 1929, the last year for which figures are available, 21 states expended more in governmental cost payments than was realized in receipts. The remainder had some surplus to be applied to debt cancellation. From 1915 to 1929 the revenue receipts of the states increased \$458,233,000, to \$2,059,327,000, or about 349 per cent. The percentage of increase for operation and maintenance was 243; for interest, 407; and for outlays, 592. There is no break in the increase of revenues, payments for operation and maintenance, and in interest charges over this period. For the years 1917 and 1919 there was some recession in outlays because of building curtailment during the war. It has been these tremendous increases that have been responsible for the present agitation for retrenchment.

INDEBTEDNESS OF STATES

While revenues have increased rapidly, the states have not kept expenditures within these bounds. Borrowing has also increased rapidly. In 1915 the gross indebtedness of the states was about \$533,000,000, or \$5.40 per capita. By 1924 the indebtedness had reached \$1,162,648,000 or \$10.74 per capita while in 1929 the indebtedness was \$2,300,000,000 or \$19.06 per capita.

MUNICIPAL FINANCE

By MERLIN H. HUNTER

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STATISTICS OF MUNICIPAL FINANCES

General.—Much greater attention has been given to Federal and state finances than to those of the minor political units,—county, township, municipal, etc. Data in regard to such expenditures are meager. The Bureau of the Census compiles statistics for cities with a population of more than 30,000, the latest available being for the year 1928. No reliable

data is available for more recent years nor for municipalities of less than 30,000 population. Compilations of the Census Bureau in *Financial Statistics of Cities, 1928* show important trends and relative emphasis, which will hold to a large extent for smaller municipalities.

Increase in Municipal Expenditures.—On every hand one hears of the great increase in public expenditures, with the implication that such

VII. PUBLIC FINANCE AND TAXATION

has been an unwarranted extravagance, as well as the demand for retrenchment. While there may, in some instances, be truth in the implication and need for the demand, yet it must not be overlooked that the people have demanded a great expansion in governmental services, both in quality and quantity. The change in the value of money, especially in recent years, also has an influence on the size of expenditures. The following table indicates the amount of municipal expenditures for certain years for cities of more than 30,000 population.

MUNICIPAL EXPENDITURES

(000 omitted)

OPERATION AND MAINTENANCE OF GENERAL DEPARTMENTS: 146 CITIES

Year	Total	General Government	Protection to Person and Property	Health and Sanitation	Highways
1928.....	\$1,656,989	\$147,250	\$328,102	\$167,979	\$138,936
1927.....	1,562,615	136,848	315,362	160,259	137,892
1926.....	1,464,849	128,365	295,256	148,658	132,321
1924.....	1,287,484	111,856	259,275	130,388	109,807
1922.....	1,155,691	105,174	234,199	115,448	98,763
1919.....	697,319	72,585	146,763	75,847	65,003
1917.....	591,399	68,912	126,854	60,378	60,712
1915.....	546,568	62,793	120,696	55,758	60,615
1913.....	496,740	58,164	112,676	50,600	55,082
1911.....	452,899	53,766	106,120	45,691	52,214
1909.....	*407,106	49,810	98,692	41,092	43,195
1907.....	*367,367	42,703	87,885	36,899	42,718
1905.....	†304,496	30,423	76,957	29,737	36,373
1903.....	*278,173	30,842	71,020	25,807	34,208

Year	Charities, Hospitals, and Corrections	Schools	Libraries	Recreation	Miscellaneous
1928.....	\$111,052	\$598,065	\$21,847	\$56,038	\$87,715
1927.....	99,806	560,668	20,167	53,839	77,771
1926.....	89,987	528,986	18,665	50,427	72,180
1924.....	79,239	475,725	15,782	41,819	63,590
1922.....	76,627	422,843	14,326	38,703	49,603
1919.....	53,262	216,701	9,079	24,204	33,870
1917.....	43,911	180,259	7,570	20,636	22,164
1915.....	38,285	162,332	7,134	20,416	18,535
1913.....	32,702	141,453	6,379	18,555	21,125
1911.....	30,647	127,604	5,939	17,114	13,801
1909.....	28,133	114,381	6,242	14,076	11,480
1907.....	24,408	102,395	4,989	11,794	13,572
1905.....	19,319	87,600	4,153	10,201	9,728
1903.....	18,280	80,853	4,067	7,457	5,634

* Includes refunds and service transfers.

† Includes refunds.

Per Capita Expenditures.—To say that a certain city or other governmental unit has spent a certain amount does not really mean very much. It is significant to know the per capita costs. The following table indicates the per capita expenditures for particular years. Some rather significant trends may be noted. From 1903 to 1928 the per capita increase was from \$13.19 to \$42.43. The per capita increase for the different items was much the same, with some variation in some of them.

MUNICIPAL FINANCE

PER CAPITA EXPENDITURES

Year	Total	General Government	Protection to Person and Property*	Health and Sanitation	Highways	Charities, Hospitals, and Corrections	Education		Recreation†	Miscellaneous*
							Schools*	Libraries†		
1928.....	\$42.43	\$3.66	\$8.33	\$4.24	\$3.56	\$2.70	\$15.80	\$0.57	\$1.44	\$2.14
1927.....	40.77	3.46	8.13	4.13	3.60	2.49	15.08	0.53	1.40	1.94
1926.....	35.99	3.32	7.77	3.90	3.55	2.29	14.49	0.50	1.34	1.83
1924.....	35.61	3.01	7.10	3.55	3.07	2.08	13.52	0.44	1.15	1.67
1922.....	33.15	2.94	6.66	3.25	2.87	2.08	12.50	0.41	1.09	1.34
1919.....	21.63	2.22	4.53	2.34	2.04	1.59	6.83	0.28	0.74	1.01
1917.....	18.96	2.18	4.04	1.93	1.96	1.36	5.89	0.25	0.66	0.69
1915.....	18.45	2.10	4.06	1.86	2.06	1.26	5.58	0.24	0.68	0.61
1913.....	17.23	2.00	3.89	1.75	1.93	1.11	4.98	0.22	0.63	0.71
1911.....	17.62	2.08	4.12	1.77	2.04	1.17	5.04	0.23	0.65	0.53
1909.....	16.07	1.96	3.89	1.62	1.71	1.10	4.54	0.25	0.55	0.45
1907.....	15.95	1.86	3.80	1.59	1.91	1.05	4.42	0.21	0.51	0.59
1905.....	13.88	1.38	3.52	1.35	1.67	0.88	3.99	0.19	0.47	0.44
1903.....	13.19	1.46	3.35	1.21	1.64	0.86	3.86	0.19	0.35	0.27

* Payment for pensions are included in column "Miscellaneous" for the years 1911 to 1928, inclusive; for the years 1903 to 1909 inclusive, they are included with expenses of police, fire, and school departments.

† Payments for expenses of art galleries and museums are included in column "Recreation" for the years 1911 to 1928, inclusive; for the years 1903 to 1909, inclusive, they are included with the expenses of libraries.

Relative Importance of Different Items.—Some functions of municipal governments, as might be expected, command a much larger percentage of the expenditures than others. The following table indicates the relative importance of these functions over a period of years. It is of importance to note that expenditures for education have always been far in the lead and that the percentage of the total devoted to this has increased with succeeding years, growing from 29 per cent in 1903 to 37 per cent in 1928. The percentage of expenditures for health and sanitation has also shown some increase, while the percentage which has gone for protection and highways has shown a marked decrease.

PERCENTAGE OF EXPENDITURES FOR DIFFERENT FUNCTIONS

Year	General Government	Protection to Person and Property	Health and Sanitation	Highways	Charities, Hospitals, Corrections	Education		Recreation	Miscellaneous
						Schools	Libraries		
1928...	8.6	19.6	10.0	8.4	6.4	37.2	1.3	3.4	5.0
1927...	8.5	20.0	10.1	8.8	6.1	37.0	1.3	3.4	4.8
1926...	8.5	19.9	10.0	9.1	5.9	37.2	1.3	3.4	4.7
1924...	8.5	19.9	10.0	8.6	5.9	38.0	1.2	3.2	4.7
1922...	8.9	20.1	9.8	8.7	6.3	37.7	1.2	3.3	4.0
1919...	10.2	21.0	10.8	9.4	7.3	31.8	1.3	3.4	4.7
1917...	11.5	21.4	10.1	10.4	7.2	31.1	1.3	3.5	3.5
1915...	11.4	22.0	10.1	11.2	6.8	30.2	1.3	3.7	3.3
1913...	11.6	22.6	10.1	11.2	6.4	28.9	1.3	3.7	4.2
1911...	11.8	23.4	10.1	11.6	6.6	28.6	1.3	3.7	3.0
1909...	12.2	24.2	10.0	10.6	6.9	28.2	1.5	3.4	2.8
1907...	11.7	23.8	9.9	12.0	6.6	27.7	1.3	3.2	3.6
1905...	10.0	25.3	9.7	12.0	6.3	28.7	1.4	3.4	3.2
1903...	11.1	25.3	9.2	12.4	6.5	29.3	1.5	2.7	2.1

VII. PUBLIC FINANCE AND TAXATION

Other Expenditures.—The items included in the above data are classed by the Census Bureau as "expenses." These indicate payments for operation and maintenance, or costs and losses from which no permanent or subsequently convertible value is received. They are the costs which are incurred because of services employed, properly rented, and materials utilized in connection with the maintenance and operation of the government. In addition to the above there is the expenditure of funds for interest, an item which is self-explanatory. Outlays, the other important item for which expenditures are made, include the cost of land

and other properties and public improvements, somewhat permanent in character, owned and used in the exercise of municipal functions. Under this is placed such items as the payment of land, the erection of buildings, the installation and extension of water supply systems, electric light systems, the purchase of equipment for fire departments, costs of increases to collections for libraries, museums and art galleries, and all other costs which add to the number and value of the permanent possessions. The relative importance of these three different types of expenditure, for certain years, is shown in the following table:

DISTRIBUTION OF EXPENDITURES

Year	Per Cent Distribution of Net Governmental-Cost Payments for			Year	Per Cent Distribution of Net Governmental-Cost Payments for		
	Operation and Maintenance	Interest	Outlays		Operation and Maintenance	Interest	Outlays
1928.....	60.9	8.5	30.6	1915.....	58.9	10.4	30.7
1927.....	59.0	8.1	32.9	1913.....	58.6	9.7	31.7
1926.....	60.4	8.2	31.4	1911.....	56.3	9.5	34.2
1924.....	61.2	7.9	30.9	1909.....	57.0	9.4	33.6
1922.....	62.9	9.8	27.3	1907.....	56.9	8.5	34.6
1919.....	68.0	10.9	21.1	1905.....	58.2	9.2	32.6
1917.....	62.9	11.0	26.1	1903.....	58.4	8.3	33.3

MUNICIPAL REVENUES

Sources.—The source of municipal revenue is made up of several items, the most important of which continues to be the general property tax. This is the common designation of the direct tax levied upon real and personal property. In addition there is found what the Census Bureau designates as special taxes. These include the taxes upon the property of corporations based upon capital stock, etc., upon savings banks and similar institutions, and taxes upon life insurance companies. Under this also come taxes levied upon mortgages at time of recording, taxes upon inheritances and incomes, taxes on investments, and numerous types of specific taxes such as a definite levy upon each telephone pole, each ton of grain, etc. Many cities continue

to make some use of the poll tax, either uniform or graded, and this forms a separate item in municipal revenues. Business and non-business license taxes consist of a large group of levies upon different types of business or business activities or those which are levied primarily for regulative purposes. The latter would include such levies as licenses upon dogs, licenses for the use of motor and other vehicles and receipts from departmental permits. Receipts from the special assessment are an important item, but do not enter into the general treasury. Subventions and grants are sometimes important as are also earnings from public service enterprises. The relative importance of the more outstanding of these items is shown in the following table:

MUNICIPAL FINANCE

PERCENTAGE OF RECEIPTS FROM VARIOUS SOURCES

Year	General Property Tax	Other Taxes	Special Assessments	Subventions and Grants, Donations, and Pension Assessments	Earnings of Public Service Enterprises	Other Revenues
1928.....	66.1	5.8	7.6	5.4	9.2	5.9
1927.....	66.1	5.7	7.7	4.9	9.6	6.2
1926.....	65.7	5.9	7.2	4.9	10.0	6.4
1924.....	66.1	5.7	5.9	5.3	10.3	6.8
1922.....	66.9	5.2	4.8	5.9	9.0	8.2
1919.....	66.0	7.6	5.6	4.1	10.2	6.4
1917.....	64.3	7.4	7.8	4.0	9.9	6.6
1915.....	62.4	7.8	8.5	4.2	10.0	6.9
1913.....	62.4	8.5	8.2	4.5	9.9	6.6
1911.....	61.9	8.7	8.4	4.6	10.6	5.8
1909.....	61.0	9.7	8.4	4.9	10.9	5.3
1907.....	59.4	10.6	8.2	4.8	11.2	5.8
1905.....	61.5	9.6	7.9	4.7	11.4	5.0
1903.....	61.4	9.8	7.6	4.3	11.5	5.5

Per Capita Tax Burden.—That the tax burden imposed by cities has been increasing much more rapidly than population is readily seen when one notes the change in the per capita amounts that have been collected from different sources over a period of years. The following table is evidence of this increase in individual burden.

PER CAPITA RECEIPTS FROM DIFFERENT SOURCES

Year	Total	General Property Tax	Other Taxes	Special Assessments	Subventions and Grants, Donations, and Pension Assessments	Earnings of Public Service Enterprises	Other Revenues
1928.....	\$72.11	\$47.67	\$4.18	\$5.52	\$3.87	\$6.65	\$4.23
1927.....	69.77	46.09	3.95	5.36	3.40	6.67	4.29
1926.....	66.14	43.46	3.90	4.75	3.23	6.60	4.20
1924.....	58.41	38.59	3.33	3.43	3.12	6.00	3.96
1922.....	53.57	35.85	2.80	2.58	3.13	4.83	4.38
1919.....	35.26	23.29	2.68	1.98	1.43	3.61	2.27
1917.....	31.97	20.57	2.37	2.50	1.28	3.13	2.12
1915.....	30.00	18.73	2.36	2.54	1.26	3.03	2.08
1913.....	28.55	17.82	2.42	2.34	1.28	2.81	1.88
1911.....	28.07	17.37	2.44	2.35	1.30	2.98	1.63
1909.....	26.42	16.14	2.48	2.22	1.28	2.89	1.40
1907.....	24.67	14.64	2.63	2.02	1.18	2.77	1.43
1905.....	22.79	14.01	2.17	1.80	1.08	2.60	1.14
1903.....	21.14	12.98	2.06	1.60	0.91	2.42	1.16

REVENUE AND COST COMPARISONS

A comparison between receipts and expenditures is exceedingly important. If a city is receiving more from its revenue sources than it is paying for operation, maintenance, interest and outlays, it has a balance to be used where most needed. If, on the other

hand, these payments are greater than the receipts, deficit financing is being practiced and the burden of indebtedness is on the increase. Of the cities of more than 30,000 population in 1928 only 68 balanced the budget while 182 closed the year with a deficit.

VII. PUBLIC FINANCE AND TAXATION

MUNICIPAL INDEBTEDNESS

Municipalities have digressed far from the pay-as-you-go policy and the indebtedness continues to mount year after year. The Census Bureau divides the indebtedness into two distinct classes, funded debt and floating debt. The funded debt includes all debts represented by formal investments which have a number of years to run and for the redemption of which no assets other than a sink-

ing fund have been specifically designated. The floating indebtedness includes all debts evidenced by warrants and accounts payable, by short term bonds, etc. The gross indebtedness is, of course, the total amount, while a subtraction of the assets in a sinking fund will leave the net indebtedness. The following table shows the total indebtedness, the sinking fund assets, and the net indebtedness for certain years.

MUNICIPAL INDEBTEDNESS

Year	Funded or Fixed, and Floating Debt	Sinking Fund Assets		Net Debt	
		Amount	Per Capita	Amount	Per Capita
1928.....	\$6,860,660,257	\$1,607,178,159	\$42.72	\$5,253,482,098	\$139.63
1927.....	6,456,781,181	1,513,273,535	41.10	4,943,507,646	134.27
1926.....	6,040,399,634	1,407,596,435	38.93	4,632,803,199	128.13
1924.....	5,057,023,870	1,215,043,841	34.82	3,841,980,029	110.09
1922.....	4,332,114,718	1,051,468,771	31.27	3,280,645,947	97.57
1919.....	3,352,688,786	811,516,426	25.93	2,541,172,360	81.18
1917.....	3,150,424,610	704,573,046	23.26	2,445,851,564	80.75
1915.....	2,866,008,818	620,102,406	21.50	2,245,906,412	77.86
1913.....	2,490,461,618	540,454,805	19.20	1,950,006,813	69.28
1911.....	2,305,059,142	496,230,750	11.52	1,808,828,392	67.52
1909.....	1,959,162,993	422,063,594	16.81	1,537,099,399	61.21
1907.....	1,657,320,345	362,441,586	15.68	1,294,878,759	56.04
1905.....	1,438,741,403	319,395,648	14.53	1,119,345,755	50.94
1903.....	1,223,101,328	290,096,696	13.90	933,004,632	44.71

TAX LEGISLATION

By BEULAH BAILEY

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SALES TAXES

North Carolina.—During 1931, 44 states have had regular legislative sessions, and 13 of these 44 have called special sessions as well as Louisiana and Mississippi which have their regular sessions in the even years. The paramount problem in nearly every state legislature has been finances. Only one state, North Carolina, adopted a sales tax. It is a gross sales tax imposed on wholesale and retail merchants only. In 1929 Georgia adopted a sales tax, but it will become ineffective at the close of the present calendar year.

Tobacco Tax.—A special branch of the sales tax family is the tobacco tax. Ohio and Texas are two new converts to the tobacco tax. In both states the tax is on cigarettes only. In Ohio the tax is 1 cent for each 10 cigarettes, and in Texas \$1.50 per 1,000 cigarettes weighing not more than 3 pounds and \$3.60 for those weighing more than 3 pounds. In both states the money goes for education. Arkansas has repealed the tax on cigars and increased by 50 cents per 1,000 the tax on cigarettes. Georgia increased the rate on cigarettes from 10% of retail price to

TAX LEGISLATION

20%. This is to be in effect until April 1, 1933, when the rate is to be again 10%.

INCOME TAXES

New Levies.—Idaho, Utah and Vermont levied personal and corporate incomes taxes for the first time. In Idaho and Utah the rate ranges from 1% to 4%. In Idaho this is for corporations also, but in Utah the corporate rate is 3%. The money in Idaho is to be used to reduce the tax on real property and in Utah 75% is to go to the state district school fund and 25% to the general fund. Vermont differentiates between earned and unearned income. The rate is 2% on the former and 4% on the latter. The corporate rate is 2% of net income. The money is for education and the counties.

Increased Rates.—North Carolina, Oklahoma, Missouri, New York and Wisconsin increased the personal income tax rate, and North Carolina and Oregon the corporate rate. The revenue from the increased tax in New York State is to go into the "unemployment" relief fund. In Oregon a credit is no longer allowed for taxes measured according to net income paid in other states. Georgia's rate was formerly one-third of the Federal. This year Georgia levied an independent tax. The rates are graduated from 1% to 5%. Corporations are taxed at 4%.

Amendments and Revisions.—The people of Kansas, Idaho and Minnesota are to vote upon constitutional amendments permitting an income tax; Pennsylvania and Georgia upon ones permitting classification. In Ohio and Florida the legislatures have turned to a low rate tax on intangibles rather than the income tax. In Ohio the rates are applied on three different bases; first, income yield, 5%; second, amount of property, 2 mills to 3 mills; third, taxable value of property, 1 mill to 5 mills. The nature of the intangible determines the rate. In Florida the rate is not to exceed 5 mills. Kansas in 1930 repealed its 1927 law on intangibles but passed one this year of 5

mills on the dollar. Last year the 1929 tax on intangibles in Oregon was held unconstitutional. The rate was 5%. This year a new law was passed, rate 8%. The money is to be used to reduce the real property tax.

Estate Levies.—Florida and Alabama have levied estate taxes for the first time. Both states wish to augment the revenue by picking up the 80% Federal credit. Nebraska, North Dakota and Florida have adopted complete reciprocity in regard to the intangible personality of non-resident decedents.

Corporations.—All corporations in Florida must file a report with the Secretary of State. The filing fee ranges from \$10.00 on \$10,000 of capital stock to \$1,000 on \$2,000,000 of capital stock. Certain companies are exempt from this. Corporations furnishing light, heat, power, natural or manufactured gas, also telephone and telegraph companies pay a tax of \$1.50 upon every \$100 of gross receipts. All transfers of stock and original issues are to be taxed in Florida at 10 cents on each \$100 of face value. Delaware, Maine, North Carolina, Ohio and Pennsylvania have made changes in the corporation tax rate.

Public Utilities.—Idaho, South Carolina and Vermont have made a new departure in the taxing of public utilities. They have levied an excise tax based upon the kilowatt hour of electricity generated. The rate is the same in each state, one-half mill per kilowatt hour. South Carolina specifies that the revenue is to be used to reduce taxes. In every case it goes into the general fund. In New Hampshire the gas and electric utilities must pay an *ad valorem* tax upon the actual value of franchises. North Carolina has increased the rate on all utilities. Ohio is reducing its rate on steam and electric railroads from 4% to 3% after 1933, and on street and suburban railroads from 1-1/5% of gross earnings to 7/10 of 1% after 1932. North Dakota levies a tax of 3/4 of 1% of the total gross receipts

VII. PUBLIC FINANCE AND TAXATION

within the state, of express companies. Wisconsin levies a tax of 6% of gross earnings on freight line companies. Wisconsin increases its rates on telephone toll lines and exchanges. Wisconsin has a new Public Service Commission succeeding the Railroad Commission.

Banks.—The two perennial irritants in tax legislation are banks and chain stores. The status quo of banks remains about the same as last year. Of the Federal Statutes 5219 have not been amended. Minnesota has arrived at a compromise. For the next two years the state and national banks will pay taxes upon the basis of 75% of the amount of the tax really due. The measure of assessment of bank taxes is changed in Arizona, Iowa, Kansas, Michigan and Missouri. In New York the rate of the franchise tax on savings banks is reduced from 1% to 6/10 of 1% of the par value of surplus and undivided earnings. In Vermont it has been decreased for savings banks from 7/10% to 6/10% of average amount of deposits and accumulations and for national banks from 7/20 of 1% to 6/20 of 1%.

Chain Stores.—The Supreme Court of the United States held the chain store tax of Indiana constitutional and will not permit a rehearing. However, the Mississippi case and the North Carolina case are pending. Wisconsin was going to pass chain store taxes but awaited the final decision of the United States Supreme Court. Alabama and Florida have levied rather stringent taxes on chain stores.

PROPERTY TAXES

The second way of solving the problem of finance is to reduce the overhead by centralization. In this respect North Carolina is outstanding in its legislation. This state is going to actually reduce the real property tax by twelve and one-quarter millions of dollars. The state has taken over the maintenance and construction of all roads in the state, and all county and local highway commissions are abolished. The state

assumes responsibility for the entire support of the constitutional six months school term, and this support must come from sources other than real property with the exception of a 15¢ levy on property which the county must levy.

Michigan consolidates its township highways into county road systems which are financed from sources other than real property. A local government commission is created in North Carolina with a Director of local government at its head. The commission has entire charge of the approving and issuing of local bonds and notes. In Michigan municipalities may not issue bonds unless their local taxes are less than 25% delinquent.

TAX TRENDS AND ADMINISTRATION

Rate Control.—Several states have passed arbitrary legislation in regard to the lowering of the tax rate. Georgia reduced the general appropriation bill by \$2,000,000 for 1931 and 1932 and taxes were decreased by \$1,000,000. In Indiana the aggregate amount of the budget of a locality shall not exceed the 1930 budget unless permission is given due to an emergency by the State Tax Board. The total amount raised from taxes on general property in 1931 and 1932 in Iowa is to be 5% less than the amount raised by the 1930 levy. In Texas, the tax rate shall not exceed 69¢. The local assessor of Massachusetts cannot set a tax rate without the approval of the commissioner of Corporations and Taxation. This gives a centralized control of tax rates. For the first time in many years Connecticut is levying a direct state tax on real property. Many states provide for the "long term" payment of taxes.

Tax Commissions.—In time all of the states will have tax commissions. This year a State Board of Tax Appeals and a State Tax Department, with a Tax Commissioner at the head, was established in New Jersey. A Tax Commission of four members was created in Utah, and

INCOME TAXES

one of three members in Oklahoma. Idaho created an office of Tax Commissioner for the purpose of administering the new income tax. Ohio increased its commission to four. Every state is doing intensive research work trying to find its way out of the tax maze. Many new special commissions have been established. California establishes a permanent tax research bureau. To cover a two-year period, \$90,000 is appropriated. A report is to be made Dec. 1, 1932. Illinois appropriates \$25,000 for a commission on taxation

and expenditures. The appointment of commissions has been authorized in Iowa, Maryland and Montana to make a study of state and local governments in their respective states. A commission in Vermont will specialize on public utilities, one in Pennsylvania on forests and mineral lands; Virginia, common carriers; Indiana, banks. A state commission in Rhode Island is to draft a revision and amendment of the tax collection laws. Massachusetts and New York extend the life of their present research commissions.

INCOME TAXES

BY MABEL NEWCOMER

PROFESSOR, VASSAR COLLEGE

FEDERAL INCOME TAX

Rates.—The income tax provisions of the Revenue Act of 1928 remained in force during the year 1931. The normal rates are 1.5 per cent on the first \$4000 of taxable income, 3 per cent on the next \$4000, and 5 per cent on all over \$8000. The surtax rates begin with 1 per cent on net income in excess of \$10,000 and reach a maximum of 20 per cent on net income in excess of \$100,000. A credit of 25 per cent of the normal tax is allowed on all net income under \$5000 and on "earned" net income under \$30,000. Personal exemptions are \$1500 for single persons, \$3500 for heads of families, and \$400 for dependents. The exemption for estates and trusts is

\$1500. The corporation income tax rate is 12 per cent and the specific credit granted to domestic corporations with a net income of \$25,000 or less is \$3000.

Revenues from personal and corporation income taxes combined decreased by nearly one-fourth for the fiscal year ended June 30, 1931, and collections for the first quarter of the fiscal year 1931-32 were 43 per cent below collections for the same quarter of the year preceding, having dropped from \$554,000,000 to \$313,000,000. Thus it is apparent that decreases in this tax will be much more serious in 1931-32 than they have been in the past year.

REVENUE FROM FEDERAL INCOME TAX

(000 omitted)

Fiscal Year	Corporation Tax	Personal Tax	Total Tax	Per Cent of All Federal Taxes from Income Tax
1930-31.....	\$1,026,444	\$ 833,758	\$1,860,202	66.3
1929-30.....	1,263,575	1,146,656	2,410,231	66.5

STATE INCOME TAXES

New Taxes and Revisions.—The year 1931 has brought three more states into the group of those levying personal income taxes. These are Idaho, Utah and Vermont. Three also have been added to those levying

corporation taxes, *viz.*, Idaho, Oklahoma and Vermont. In addition to these new taxes, rates have been revised upward in six states,—Georgia, Missouri, New York, North Carolina, Oklahoma and Oregon. The increases in New York are for one year only.

VII. PUBLIC FINANCE AND TAXATION

The legislatures in a number of other states have considered bills providing for income taxes, among them Illinois, Indiana, Kansas, Michigan, Montana, Texas and West Virginia; but in each case legislation was either defeated or deferred.

The Idaho law imposes a graduated tax of from one to four per cent on both private individuals and corporations. The maximum rate is reached on taxable income in excess of \$6000. Exemptions are \$1000 for single persons, \$2500 for married persons, and \$300 for dependents.

Utah.—The law provides for a progressive tax on personal income beginning at one per cent and reaching four per cent on all income over \$8000. The personal exemptions are \$2000 for heads of families, \$1000 for single persons and \$400 for dependents. Taxpayers may offset taxes paid on property within the state up to one-third of the amount of their tax. Another unusual feature of the Utah law is the provision for income returns from all residents of the age of 21 years or over (with certain exceptions) whose net income is less than \$1000 if single, or \$2000 if the head of a family. This return is to be accompanied by a filing fee of \$1.

Vermont.—The law provides for a flat rate of two per cent on all income excepting that from intangibles. The exemptions are \$2000 for heads of families, \$1000 for single persons and \$250 for dependents. Income from intangibles is subject to a rate of four per cent, and exemptions are reduced to \$800 for heads of families and \$400 for single persons in case the individual's income is derived solely from intangibles. Corporations, other than public utilities, insurance companies, national banks and savings banks, are subject to a two per cent rate.

Oklahoma has increased the minimum rate on personal income from three-fourths of one per cent to 2 per cent, and the maximum rate from 2 per cent to 5 per cent. In addition it has cut exemptions for heads of families and single persons to less than half of the former exemptions. These same rates apply to corporations other than insurance companies. Corpora-

tions have not been subject to an income tax in Oklahoma before.

Georgia.—Rates on personal income in Georgia have been changed from one-third of the Federal rates to a scale of from 1 per cent to 5 per cent. No change has been made in exemptions.

Missouri.—The rates of the Missouri personal income tax have been increased from a flat 1 per cent to a graduated scale of from 1 per cent to 4 per cent. The corporation rate has been increased from 1 per cent to 2 per cent.

North Carolina rates have been increased from a scale ranging from 1.25 per cent to 5 per cent to one ranging from 2 per cent to 6 per cent. Further the maximum rate applies to taxable income in excess of \$10,000 instead of the former \$15,000.

Oregon.—The only change in the Oregon law was the increase of the rate on income from intangibles from 5 per cent to 8 per cent. This applies to corporate as well as personal income.

New York, at a special session of the legislature, doubled the rates of the tax on 1931 income payable in 1932. This is an emergency measure for one year only to provide funds for unemployment relief.

The present status of state income taxes is as follows: Fifteen states are taxing personal and corporation income. Four states are taxing personal income only. And three states have taxes on corporation income only. All of these states excepting Delaware, Massachusetts, New Hampshire, Tennessee, Utah and Vermont, tax such income of non-residents as they can reach. New York, North Carolina and South Carolina, however, credit non-residents with the amount of any income tax paid in the state of residence if such state allows similar credits. All of these states but Wisconsin tax residents on income derived from sources outside of the state, with only Georgia, Missouri, North Carolina and South Carolina allowing credits for income taxes paid in other states.

INCOME TAXES

DIGEST OF STATE PERSONAL INCOME TAX PROVISIONS

State	Year First Effective	Personal Exemptions			Rates of Tax (Per Cent)	Amount of Taxable Income in Excess of Which Maximum Rate Applies
		Single	Head of Family	Dependents		
Ark.....	1929	\$1,500	\$2,500	\$400	1 -5	\$25,000
Del.....	1917	1,000	2,000	—	1 -3	10,000
Ga.....	1930	1,500	3,500	400	1 -5	20,000
Idaho.....	1931	1,000	2,500	300	1 -4	6,000
Mass.....	1917	2,000	2,500	250 (a)	1½-6 (b)	—
Miss.....	1914	1,500	3,500	400	2½-5½	15,000
Mo.....	1917	1,000	2,000	200	1 -4	9,000
N. H.....	1924	200	200	—	(c)	—
N. Y.....	1919	2,500	4,000	400	1 -3	50,000
N. C.....	1921	1,000	2,000	200	2 -6 (d)	10,000
N. D.....	1919	1,000	2,000	300	1 -6	10,000
Okla.....	1913	750	1,500	750	2 -5	100,000
Ore.....	1930	1,500	2,500	400	1 -5 (e)	4,000
S. C.....	1922	1,200	2,200	400	1 -5	8,000
Tenn.....	1929	(f)	(f)	—	5 (g)	—
Utah.....	1931	1,000	2,000	400	1 -4 (h)	8,000
Va.....	1843	1,250	2,800	400	1½-3	5,000
Vt.....	1931	1,000	2,000	250 (i)	2 -4 (j)	—
Wis.....	1911	(k)	(k)	(k)	1 -6 (l)	12,000

(a) Exemptions apply to earned income. There is a flat exemption on unearned income of \$300. (b) Earned income and annuities 1½%; capital gains 3%; interest and dividends 6%. (c) Average rate on real estate. This was about 3% in 1931. Applies only to income from interest and dividends. (d) Income from stock in foreign corporations taxed 6%. (e) Exemptions and rates do not apply to income from intangibles. This is taxed at 8% with a \$500 exemption for a single person and \$800 for heads of families. (f) Income from \$1000 worth of bonds and stocks. (g) Applies only to income from dividends and interest. (h) Property tax offset is provided to the extent of one-third of the tax. (i) In case all income is from intangibles exemptions are \$400 for a single person and \$800 for the head of a family. (j) 2% on all income excepting that from intangibles; 4% on income from intangibles. (k) In place of exemption taxpayers must deduct from their tax after it has been computed \$3 for a single person, \$17.50 for a head of family, and \$3 for each dependent. (l) Including surtax for teachers' pensions rates are 1-½ to 7 per cent.

DIGEST OF STATE CORPORATION INCOME TAX PROVISIONS

State	Year When First Effective	Kind of Corporations Exempt	Amount of Income Exempt	Rate of Tax (Per Cent)	Exemption of Dividends of Other Corporations Paying Income Tax to State	Exemption of Interest from Government Bonds
Ark.....	1929		\$1500	2	—	x
Calif.....	1929	Public utilities; insurance	—	4	x	—
Conn.....	1915	Public utilities; insurance; banks	3000 (a)	2	—	—
Ga.....	1930	Insurance; banks	—	4	—	x
Idaho.....	1931		—	1-4	x	—
Mass.....	1919	Public utilities; insurance	—	2½ (b)	x	—
Miss.....	1914	Banks	1500	2½-5½ (c)	x	x
Mo.....	1917	Express; insurance; banks	—	2	—	x

(a) Same as Federal. (b) Bank rate to be determined by Commissioner; not to exceed highest rate applied to business corporations. This was 6.4% in 1930. (c) Same as personal; maximum on taxable income in excess of \$5000. (d) Income from stock of foreign corporations taxed 6%. (e) Income from intangibles only. (f) Six per cent applies to all income in excess of \$6000.

VII. PUBLIC FINANCE AND TAXATION

State	Year When First Effective	Kind of Corporations Exempt	Amount of Income Exempt	Rate of Tax (Per Cent)	Exemption of Dividends of Other Corporations Paying Income Tax to State	Exemption of Interest from Government Bonds
Mont.....	1917	Express; national banks	2500	1	—	—
N. Y.....	1917	Public utilities; insurance; real estate	—	4½	—	—
N. C.....	1921	Foreign insurance; national banks	—	5½ (d)	x	x
N. D.....	1919	Insurance; national banks	—	3	x	x
Okla.....	1931	Insurance	—	2-5	x	x
Ore.....	1930		—	8 (e)	—	x
S. C.....	1922	Insurance; banks	—	4½	x	x
Va.....	1927	Public utilities; insurance; banks	—	3	x	x
Vt.....	1931	Public utilities; insurance; national and savings banks	—	2	x	x
Wis.....	1911	Public utilities; insurance	—	2-6 (f)	x	x

Revenue from State Income Taxes.—In Arkansas \$500,000 of the tax is credited to the charities fund and \$750,000 to the common school equalization fund. The remainder is for general state use. In Delaware the greater part of the proceeds of the income tax is credited to the state school fund. In Oklahoma and Utah three-fourths of the proceeds of the tax is to be paid into the state school fund and one-fourth into the general fund. In Vermont \$300,000 is to be paid to the state school fund and \$150,000 to the towns and villages for roads. In Massachusetts the state retains the temporary additional tax and enough of the regular tax to cover the cost of administration. The remainder is distributed to the local dis-

REVENUE FROM STATE INCOME TAXES

(in thousands of dollars)

State	Amount from Personal Income	Amount from Corporation Income	Amount for State Purposes	Amount for Local Purposes	Fiscal Year Ending
Ark.....	\$ 650 (a)	\$ 540 (a)	\$ 1,190	—	Dec. 31, 1930
Calif.....	—	6,593	6,593	—	June 30, 1931
Conn.....	—	3,535	3,535	—	June 30, 1931
Del.....	1,924	—	1,924	—	June 30, 1931
Ga.....	200 (a)	430 (a)	630	—	Dec. 31, 1930
Mass.....	31,786	6,890	1,209	\$37,112	Nov. 30, 1930
Miss.....	665	970	1,635	—	Sept. 30, 1930
Mo.....	2,802	1,450	4,252	—	Dec. 31, 1929
Mont.....	—	168	168	—	June 30, 1931
N. H.....	634	—	10	624	June 30, 1931
N. Y.....	39,494	70,942	59,576	50,460	June 30, 1931
N. C.....	1,699	5,592	7,291	—	June 30, 1930
N. D.....	156	144	300	—	June 30, 1931
Okla.....	481	—	481	—	June 30, 1930
Ore.....	1,750	500	2,250	—	Sept. 30, 1931
S. C.....	434	1,502	1,936	—	Dec. 31, 1930
Tenn.....	584	—	584	—	June 30, 1930
Va.....	1,954	2,065	4,019	—	June 30, 1931
Wis.....	9,004 (b)	12,028	9,453	11,359	June 30, 1931

(a) Division between personal and corporation income tax estimated. (b) Calendar year 1930.

LAND AND PROPERTY TAXES

tracts. In New Hampshire, also, the proceeds over the cost of administration are turned over to the towns and cities. In New York half of the personal income tax, and one-third of the corporation income tax and all of the bank income tax are distributed to the local districts. In Wisconsin the surtax is used for special state expenditures, but only 40 per cent of the normal tax is kept by the state. In the other states the proceeds are all kept for administration and general state purposes.

LAND AND PROPERTY TAXES

By JENS P. JENSEN

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PUBLIC INTEREST IN TAX SITUATION

Commissions of Inquiry.—Not for years has the interest in taxation, chiefly property taxation, been aroused as it is today. The drought and the depression have jointly punctuated the long increase of public expenditures. For some years past interest has manifested itself in the creation of legislative tax commissions of inquiry. Although in 1931 special tax commissions were authorized in Arizona, Illinois, Indiana, Iowa, Maryland, Montana, Pennsylvania, Rhode Island, Vermont, and Virginia, and although Massachusetts and New York extended the life of their existing commissions, the field of these bodies is usually restricted to some specific phase of taxation or public finance. The reason assigned by Governor Bryan of Nebraska for vetoing a bill providing for a tax inquiry commission, that the people are tired of such commissions, may be taken as evidence that something more definite and tangible than general inquiries is required. California established a permanent tax research bureau with an appropriation of \$90,000.

Moratoria And Other Manifestations.—The public interest manifests itself in the widespread complaints of excessive taxes, in the formation of taxpayers associations, in legislative and administrative measures reducing expenditures and taxes, in reorganization of government and the centralization of governmental functions, in increasing tax delin-

quency, and in more or less futile tax-payment moratoria. Louisiana has issued state bonds to raise funds for the counties where, on account of the 1930 drought, tax payments were deferred, the counties to reimburse the state over a ten-year period. Several states have declared moratoria for property taxes, either through gubernatorial proclamation as in Kentucky, or by statute as in Texas; and in many others they have been refused on the ground of unconstitutionality or inexpediency, or both.

TAX REDUCTION

Iowa.—A 1931 law required all taxing divisions to effect a 5% reduction below the 1930 levies, a measure which, with other efforts, is reported to effect a saving of \$10,000,000.

Kansas.—The Kansas legislature proposed an amendment to the constitution, to be voted upon in 1932, which would limit property tax levies to 20 mills in cities and 15 mills in other units, the legislature to apportion these maximum aggregate rates among the divisions.

Michigan.—Township road districts were discontinued, the counties to meet road costs from sources other than property taxes.

North Carolina.—Undoubtedly North Carolina adopted the most revolutionary reform in taking over the construction and maintenance of all roads in the state, and assumed responsibility for the constitutional six-months school terms, also to be financed primarily from non-property-

VII. PUBLIC FINANCE AND TAXATION

tax sources, any additional school term to be financed by the counties. North Carolina also assumed control over local governmental functions, under the Local Government Act, of which a test has already been made (159 S. E. 439).

Oregon.—If the Oregon electorate should approve a proposed amendment in 1932, all persons voting upon bond issues and special tax levies must be taxpayers; and the tax-levying bodies may use any one of the three past years as the basis for the 6% levy limitation.

Illinois.—When a statutory tax-rate limit is reduced, the effective limit at the time of making the levy will control (176 N. E. 767).

General.—In several states the tax rate has been reduced by legislation or made subject to central administrative control. The current assessments have shrunk measurably, the shrinkage in North Dakota, for example amounting to between 15% and 20%. Except for unprofitable short lines and urban and interurban electric lines, the utility corporations do not appear to have shared ratably in this decline.

ASSESSMENT

Escape Problem.—Administrative vigilance is required to prevent escape of taxable property, the new forms of property appearing along the improved highways being perhaps the most difficult to deal with. It appears that such property is increasingly reached by means of specific taxes in lieu of the *ad valorem* tax. Thus Maryland adopted a tax of $\frac{1}{2}$ of 1 cent per square foot of billboards; and in New Jersey there is a similar tax of 3 cents. In Oregon the attorney has ruled that the poundage tax on fish caught in the high seas and brought to Oregon is valid. This tax is not merely a specific tax; it is also a special-purpose tax, the avails being used for the propagation of fish.

Assessment Relief.—Relief in the courts against excessive or discriminatory assessment will perhaps always be necessary. Against high or even confiscatory levies, however, the

courts can give no relief, so long as the electorate will initiate and support the taxes (33 S. W. 2nd, 69). Relief has been given against arbitrary assessment of coal lands in Pennsylvania (152 Atl. 755; 51 Sup. Ct. Rep. 350) for violation of the equal protection clause, and indirectly elsewhere. The supreme courts of the respective states have granted relief in 237 N. W. 140; 237 N. W. 410; 293 Pac. 279; 295 Pac. 152; 297 Pac. 476; 172 N. E. 579; 160 S. E. 173; 132 So. 507; 132 So. 842; 30 S. W. (2) 368; 33 S. W. (2) 472; 36 S. W. (2) 707; 41 S. W. (2) 478; and less directly in other cases.

Special Tax and Assessment Distinction.—The distinction between special taxes and special assessments was well drawn by the United States Supreme Court in a Mississippi case (51 Sup. Ct. Rep. 108). A road district is a permanent governmental division, and *ad valorem* taxes levied by it are not invalid as to a railroad company although there is no special benefit. A special assessment district is temporary, existing solely for the purpose of financing a specific improvement, and for the assessments there must be an adequate and proportionate benefit, as held by the Federal courts in 45 Fed. (2) 11; 46 Fed. (2) 395; and 46 Fed. (2); and the presence of a general benefit does not invalidate the assessments. A Florida decision (135 So. 785) holds that, if laid conformably to law, such assessments are valid for initial expenses of a district, although the district is abandoned.

REQUIRED OR PROHIBITED LEVIES

The question of whether a political unit may or must levy taxes for special purposes has produced several decisions. The supreme court of Florida has ordered the levy of taxes for the debt service. Poverty and follies of expenditures during the boom period are not adequate defenses against payment of the bonds. Cities of Florida apparently may not, although apparently California cities may spend public money for advertising the cities and their municipal

LAND AND PROPERTY TAXES

advantages. A Tennessee law empowering a county to levy a tax annually, in excess of all other taxes, is not arbitrary or unconstitutional delegation of power (33 S. W. 2nd, 69); but a charter grant of power to a municipality to levy taxes may be restricted by subsequent legislation (30 S. W. 2nd, 240).

EXEMPTION

Additional Privileges.—The pressure of taxation in a depression period has intensified the demand for reduction in the exemption privilege. Curiously enough, it has also been used as a reason for additional exemptions. Thus in 1930 Mississippi exempted surplus of banks from taxation while bank deposit guaranty certificates are outstanding, and this exemption has been sustained in 133 So. 195. Wisconsin exempted tangible personal farm property in 1931 and Ohio exempted personal property not used in business, as a part of the new classification of 1931. Mississippi repealed the 5-year exemption law; but most of the companies having major projects had already taken advantage of the privilege, the amount involved being about \$50,000,000. In Georgia the exemption of plants for processing cotton does not extend to cotton ginneries separating seed from fibre (157 S. E. 276).

Grains and Rural Lands.—Kansas has undertaken to tax the grain held by the Grain Stabilization Corporation, an agency of the Federal Farm Board. In Washington and Oklahoma, however, the attorneys general have ruled that such grain is exempt. The Minnesota supreme court has held that lands of the Rural Credits Bureau, under Article IX of the constitution are "immune" from taxation (234 N. W. 691). Lands acquired by the Wisconsin Annuity and Investment Board are exempt according to the attorney general. On the other hand, lands acquired under foreclosure by South Dakota under the Rural Credits Act are taxable under a 1930 constitutional amendment. And Texas is similarly arranging to pay county

taxes on lands of the State University. In Arizona a tax on the full value of land encumbered by a state mortgage is not an incumbrance on the school fund (294 Pac. 834).

Other Land Exemptions.—The United States Supreme Court has upheld the state court in 151 Atl. 29, that property submerged by the dam of a power company, a licensee of the Federal Power Commission, is not exempt as a Federal instrumentality. But lands belonging to the Cherokee Indians under Act of 1924 are exempt. Delay in cutting logs under a permit from the United States Forest Service does not work tax liability for taxes on the ground that permittee is the equitable owner of the timber (294 Pac. 529). But, according to 17 Pa. Sup. Ct. Rep. 238, a purchaser of land from the United States, contracting to pay all taxes, is not exempt on the theory that the title vests in the United States till the last payment is made. Transfer of land to the United States for parks, placing a part of the land beyond taxation by the state is not a violation of the state uniformity rule (35 S. W. 2nd, 396).

Public Property.—In Oregon, municipal property, situated outside of the corporate boundaries, is exempt (293 Pac. 924); but it was held otherwise in North Carolina (156 S. E. 855). Decisions involving the tax liability of public property occur in 296 Pac. 48; 297 Pac. 405; 298 Pac. 366; and 232 N. W. 375. Property purchased with money from veterans relief fund is taxable in 158 S. E. 847; 849, in 294 Pac. 915; and by administrative rule in other states. In a Georgia case, however, the ruling was opposite (159 S. E. 501). Decisions involving exemption of property of religious, educational, charitable and fraternal associations occur in 292 Pac. 101; 295 Pac. 815; 296 Pac. 734; 173 N. E. 770; 237 N. W. 265; 156 S. E. 857; 137 So. 204; 32 S. W. (2) 343; 35 S. W. (2) 389; and other cases, not involving new principles, and usually adverse to the petitioner for exemption. The Washington State supreme court has upheld the 1931 law, Chapter 96, exempting money

VII. PUBLIC FINANCE AND TAXATION

and credits, leaving that state as practically the only one not taxing money and intangibles, even in part.

SUBSTITUTE TAXES

Wisconsin abolished the *ad valorem* tax on motor vehicles, and increased the fees on certain vehicles. The Florida license tax on common carrier vehicles is in lieu of the *ad valorem* tax. The Pennsylvania capital stock tax on the shares of a steamship company is not in lieu of *ad valorem* taxes on its wharves (153 Atl. 559). The exemption of domestic insurance companies in Mississippi from the *ad valorem* tax in lieu of the premium tax is valid (131 So. 282).

CLASSIFICATION

Ohio adopted a comprehensive classification under the 1929 constitutional amendment, embracing not only intangibles, but also certain classes of personality, consumers capital being exempt. The Florida classification under the 1924 amendment, embracing only intangibles is much simpler, and it is accompanied by a documentary stamp tax. The Kansas legislature re-enacted the 5-mill tax on intangibles repealed in 1930. The supreme court of Oregon has construed the 1929 tax of 5% on interest and dividends a property tax, and hence invalid since it does not apply to corporations (292 Pac. 813; 295 Pac. 461). The legislature promptly enacted another tax, making the rate 8%; and this tax is in turn attacked in the courts. The Kansas taxes on intangibles are interpreted in (294 Pac. 938, 940).

SITUS

The problem of determining what part of the Keokuk dam is located in Iowa is headed for the Federal Courts. The Missouri Supreme Court has determined the situs of property of a municipal water plant located in another county (38 S. W. 2nd, 1068). Determination of the business situs of intangible property is attempted in 176 N. E. 11; 175 N. E. 700; 155 S. E. 895; and other cases.

OPERATING PROPERTY

The California gross receipts tax does not apply to contract carriers, but only to those carriers which operate under a certificate of convenience and necessity from the state railroad commission. A building under construction by a telephone company in California is not operating property, and is therefore subject to local *ad valorem* taxes (298 Pac. 9). A former decision to the effect that operative property leased to a utility corporation is not subject to *ad valorem* taxes is being attacked. The Wisconsin Supreme Court has held that property located on the right of way of a railroad company is locally taxable unless used principally for operating purposes (238 N. W. 426).

ADMINISTRATION

Since 1930 Massachusetts has had a unique Board of Tax Appeals, patterned partly upon the Federal Board of Tax Appeals, consisting of 3 appointive members, taking the place of the former *ex officio* board and assuming appeal jurisdiction over a considerable number of taxes. Oklahoma has created an administrative tax commission of 3 members. The new Utah tax commission must be bi-partizan and consists of 4 appointive members. The Ohio commission was given a fourth member, whose duty is to administer the new taxes on intangibles. In Kansas the assessment of the property of motor-vehicle common carriers is assigned to the tax commission. Interpretations of the duties of the state assessing and equalizing agencies occur in 296 Pac. 533; 299 Pac. 1055; 237 N. W. 657; 157 S. E. 718; 160 S. E. 173; 38 S. W. 2nd, 318; 41 S. W. 2nd, 393; and other cases. Procedure of local assessment and review, and the duties of local agencies are considered in 170 N. E. 728; 236 N. W. 284; 130 So. 31, 642, 654, 877; and in numerous other cases, not involving new principles.

COLLECTION AND DELINQUENCY

Tax delinquencies have increased in many cases, not unfortunately al-

CORPORATION AND BANK TAXES

ways only on the part of those who cannot pay. Idaho has issued tax anticipation warrants in order to pay state warrants upon presentation, and this condition is quite general. In Cook County, Illinois, the delay in tax payments due to the 1928 reassessment, ordered by the tax commission, and resisted by the local assessing bodies, has necessitated still more extensive use of this already over-worked device. It is sustained by the Illinois Supreme Court as an assignment of assets rather than an extension of debt, and thereby brought outside of the debt limits, except such as apply specifically to the issue of anticipation certificates, a tax being considered an asset when levied (176 N. E. 59). The enormous delinquen-

cies in many districts should serve to discredit extensive application of this theory.

The 1931 North Carolina law provides for prepayment of taxes and discounting them at from 1% to 3%, according to the length of time paid in advance. The Montana 1931 delinquency law provides for payment in installments, and interest and penalties for delinquency. Questions of the statute of limitations, liens, distraints, and other matters relating to the collection of delinquent taxes are treated in 295 Pac. 110; 296 Pac. 1; 299 Pac. 268; 158 S. E. 486, 584; and numerous other cases not involving new principles. It is to be feared that there will be many more cases if delinquency continues to increase.

CORPORATION AND BANK TAXES

By JENS P. JENSEN

PROFESSOR, UNIVERSITY OF KANSAS

CORPORATION TAXATION

Legislation.—Several states made changes in entrance and annual corporation taxes or fees. Florida required a filing fee, ranging from \$10 on \$10,000 of capital stock to \$1,000 on stock of \$2,000,000 or over, with exemption for certain corporations; light, heat, power, gas, telephone, and telegraph companies are to pay a gross receipts tax of 1½%; all stock transfers and original issues are subject to a stamp tax of 1 mill per dollar of face value. Arkansas provided for a license fee of \$5 for domestic corporations doing business outside state. North Carolina increased the franchise tax from 1/10 of 1% to ¼ of 1%, and provided that, in cases of grossly undercapitalized corporations, actual value may be used as the tax basis. The new Ohio schedule of filing fees range from 10 cents for each share not exceeding 1,000 to ¼ of 1 cent per share in excess of 500,000. Oklahoma provided for a capital stock tax of \$1 per \$1,000, the courts having held invalid the former law; the maximum

tax is \$10,000. In Pennsylvania a new law provided for a proportional deduction for investments in certain stocks, allowable in computing the capital stock tax. Another law defined the exemption under the corporate stock tax of holding corporations whose foreign subsidiaries are engaged in business auxiliary to that of the parent corporation. A third law provides a transit tax of 8 mills per dollar of gross receipts of taxicab companies, against which credit may be taken for motor vehicle license and city excise taxes, thereby correcting the involuntary exemption resulting from the *Quaker City Cab* case (277 U. S. 389). Delaware reduced its franchise tax, and Maine increased its organization fee. West Virginia provided for a tax of 5 cents per acre on any acreage in excess of 10,000 held in the state by any one corporation. In Texas the annual filing charge for foreign corporations is now \$1 per \$1,000 of capital stock employed in the state; the entrance fee is \$50; upon corporations engaged in more than one purpose, the multiple

VII. PUBLIC FINANCE AND TAXATION

tax is reduced from 100% to 25% for each additional purpose. In New Hampshire, gas and electric companies will pay an *ad valorem* tax on franchise value. In North Carolina, the rates of gross receipts taxes of all utilities have been increased. North Dakota levied a tax of $\frac{3}{4}$ of 1% on gross receipts of express companies. In Wisconsin, a similar tax was levied on the gross receipts of freight line companies, and the rates on telephone toll and exchange receipts were increased. Several states levied excise taxes upon motor vehicle common carriers. In North Carolina the rate on fire insurance companies was raised from $2\frac{1}{2}\%$ to 3%; and on workmen's compensation and self insurance, to 4%. A new variety of excise taxation has appeared in South Carolina, Idaho, and Vermont, in the form of a tax of $\frac{1}{2}$ of 1 mill per kilowatt hour of hydroelectric electricity generated, whether used in the state or transmitted to other states. As to the interstate movement, the tax has been attacked, sustained in a three-judge statutory court, and is now pending before the Supreme Court of the United States.

Court Decisions.—In Illinois, the exchange of par for no-par stock did not necessitate the payment of a franchise tax on capital, plus surplus which had not previously been capitalized. The court held (172 N. E. 705) that no assets were acquired by the exchange and hence no tax was due. In Montana, the supreme court held the 1925 law, providing a \$50 value for no-par stock, invalid, following *Airway Corporation v. Day* (266 U. S. 268), also the provision that foreign corporations should pay an additional entrance fee. The Illinois franchise tax is being tested in the U. S. Supreme Court, on the ground that it provides for an illegally high minimum tax where the corporation would have a low tax on an allocation basis. It was remanded (282 U. S. 10) to the lower court for error, where the tax had been held discriminatory. The tax in Washington, on entire authorized capital stock of domestic corporations, is not invalid because the tax on foreign cor-

porations applies only to the proportion of the total capital employed in Washington (299 Pac. 352). In Alabama, the supreme court held the retaliatory tax on insurance premiums invalid, and allowed recovery of the difference between the Alabama 1.5% tax and the California 2.6% tax (134 So. 858). The Washington State supreme court held the retaliatory tax should be limited to the amount necessary for equalization. In Georgia, a mileage tax, graduated on the basis of the capacity of the trucks, plus a fee for a certificate of convenience and necessity, plus a license tax on the trucks, is not burdensome on interstate commerce, (157 S. E. 464; 157 S. E. 673). The U. S. Supreme Court upheld (282 U. S. 811) the North Carolina classification, whereby carriers operating between termini more than 50 miles apart pay a higher tax than those operating over shorter distances. It also held (*Columbus and Greenville Ry. Co. v. Miller*) the Mississippi classification valid, where under the tax is \$350 per mile, except that it is only \$25 per mile, when the line is not more than 25 miles long. And it has held (*Interstate Transit Co. v. Lindsey*) the Tennessee tax on interstate motor carriers valid only in so far as it is compensatory; the charge must be predicated upon use of roads by the carriers; where the tax is based solely on the earning capacity, there is no such relation; and the absence of a provision that the tax was for highways was held evidence that the tax was on interstate commerce when most of the road-tax laws of the state specified such use of the proceeds.

BANK TAXES

Taxes on Income.—Arkansas, Georgia, Missouri, and North Carolina impose income taxes on state banks, but under Section 5219 R. S. U. S. not on national banks, and also tax the shares of all banks. The rate was raised in Missouri in 1931 from 1% to 2%. The North Dakota 1931 law abandoned the income tax on state banks, since the tax could not be applied to national banks, and since the state desired to continue

CORPORATION AND BANK TAXES

the property tax on the shares of both classes of banks. Connecticut and Virginia impose income taxes on corporations in general, but not on state or national banks, and both classes of banks pay *ad valorem* taxes on their shares. The income tax in Wisconsin applies to banks in lieu of the property tax on shares, and changes were made in the income tax, but not affecting banks in particular.

Taxes Measured by Income.—

The 1929 excise tax of Washington was held unconstitutional (289 Pac. 536). The Governor vetoed the bill which the legislature had approved as a substitute. Banks are taxed on their tangible personal and real property, as are other taxpayers. Washington is believed to be the only state where such is the case. National banks are reported to be paying taxes on their personality, although under Section 5219 not required to do so. The excise tax, however, was upheld in California (298 Pac. 489), when the excise tax is in lieu of the property tax on the shares; and such is also the case in Massachusetts, New York, and Oregon. The new excise tax in Utah, 3% on all corporate incomes and with a possible offset for property taxes paid not in excess of one third of the 3%, is also in lieu of the tax on shares. In Idaho the new excise tax applies to banks and corporations in general, and the banks are expected to pay the tax on the shares also. The banks, certainly the national banks, cannot be required to pay both, and the law is being attacked in the courts. In Montana and Tennessee, at the rates of 1% and 3%, respectively, the excise applies to state banks only, and the tax on the shares as property is payable by both classes. In Mississippi and North Carolina, the excise tax applies to corporations generally but not to either class of banks, and the shares are taxed as property to both classes. The 1931 2% corporate Vermont excise tax does not apply to banks, and the shares are taxable to the holder at the rate of 4% of the income. The effect of the decision in the Macallen case (279 U. S. 620), in which a non-bank corporation was

denied the deduction of income from tax-exempt securities in determining the measure of the excise tax, have been restricted in the Educational Films case (51 Sup. Ct. Rep. 170), testing the New York franchise tax on national banks, in which the inclusion of income from royalties as a part of the measure of the tax was held proper and not violative of Section 5219. Directly following this case the California supreme court upheld the excise tax of that state (298 Pac. 489), sustaining the inclusion of income from tax-exempt sources. It would seem therefore that the excise tax may still be used as a device for taxing corporations, including banks, on their entire income, regardless of its source.

Ad Valorem Taxes.—While apparently income from tax-exempt sources may be included in the measure of the excise tax, the case appears increasingly otherwise with the securities themselves as factors in determining the taxable residual value of the shares under the *ad valorem* tax. That not only Federal securities but also such intangibles as are exempt under the state's own laws are deductible was held in Kansas (294 Pac. 940). It was similarly held in Michigan (First National Bank of Wyandotte v. Common Council). This deduction of tax-exempts may seriously interfere with the taxation of the shares as property. In New Jersey it was held (151 Atl. 364) purchase of tax-exempts just preceding the tax day, and sale thereof shortly afterwards, whether for the purpose of tax avoidance or not, could not operate to forfeit the privilege of deduction of the exempts. The 1929 Iowa law, under which national banks were taxable on capital on a 25% valuation, at the local property tax rate, and on their surplus on a 100% valuation at the rates of 6 mills, was held invalid in so far as the tax on the capital exceeded a tax of 6 mills on the full valuation, which is the rate at which "competing moneyed capital" is taxed (42 Fed. 2nd, 30). The 1931 bank tax law presumably cured this defect, and also sought to

VII. PUBLIC FINANCE AND TAXATION

prevent, in effect, the application of the low rates to bank-owned real estate. The new Ohio classification of property for taxation makes bank shares taxable at the rate of 2 mills on the dollar of valuation, and provides for a similar tax on bank deposits, the tax to be paid by the bank and the deposits to be exempt to the depositors. The new Florida 2-mill tax on bank shares is apparently in addition to the customary *ad valorem* tax on the shares. However, at least

in case of national banks, it would appear that only one of these taxes can be collected. The Minnesota 1931 bank tax law compromises the assessment of bank shares at 75% of their value.

Savings Banks.—The New York franchise tax on savings banks, which is in lieu of the excise tax on other corporations, was reduced from 1% to .6 of 1%. In Vermont the tax on deposits of savings banks was reduced from .7 to .6 of 1%.

INHERITANCE TAXES

By ALZADA COMSTOCK

PROFESSOR, MOUNT HOLYOKE COLLEGE

GENERAL

The year 1931 brought few changes in the inheritance tax laws of the states and the Federal Government. The rates of the Federal estate tax remained those which became effective with the passage of the Revenue Act of 1926; namely, 1 to 20 per cent, with an exemption of \$100,000. The 80 per cent credit against the Federal estate tax for inheritance taxes paid to the states was still in force. Revenue from the Federal estate tax remained small. Collections in the first four months of the fiscal year 1931-32 were \$21,373,000, representing a return for the year of approximately \$74,000,000.

THE GIFT TAX

In the field of Federal taxation the chief event of the year was a set-back to the collection of gift taxes. In 1926 Congress had declared, in Section 302(c) of the Revenue Act of that year, that a gift made before death was made in "contemplation of death" if the property was worth more than \$5,000 and the gift was made within two years prior to death. This provision was placed on the statute books as a substitute for the gift tax provision, which was repealed, at a time when there was agitation for the repeal of the whole estate tax.

In 1931 three state courts, those of Pennsylvania, Massachusetts and New

York, held Section 302(c) unconstitutional. Subsequently the United States Circuit Court of Appeals affirmed the decision of the judge of the Federal district court at Boston that Section 302(c) is unconstitutional. It was understood that one of the cases was to be brought before the United States Supreme Court, which had already declared unconstitutional a Wisconsin statute according to which gifts made six years prior to death were assumed to be in "contemplation of death" and were therefore subject to a state tax. The decision of the Court of Appeals was an indication that Congress was not to be allowed to rule arbitrarily that the amount of a gift or the time of making a gift determined its inclusion in the taxable estate, but that actual contemplation of death was to become the determining factor.

THE INHERITANCE TAX IN FLORIDA

The only change in 1931 in the list of states which tax inheritances, a list which for some time had included all except Alabama, Florida, Nevada and the District of Columbia, was the inclusion of the state of Florida. From the time of its incorporation as a state in 1845 Florida had refrained from the use of inheritance taxes. In 1924 sentiment crystalized, and the citizens

AUTOMOBILE TAXES

of Florida ratified an amendment to the state constitution which prohibited any tax upon inheritances or upon the income of residents or citizens of the state. In 1926 the credit feature of the Federal state tax, under which an estate is allowed credit for inheritance taxes paid to the states, appeared and brought a complication into the situation in Florida; for Florida, having no inheritance taxes, could not offer its citizens or residents a Federal deduction. They paid 100 per cent of their Federal estate taxes, as against 20 per cent in states where the state inheritance tax laws were fully adjusted to the Federal law.

Florida took the case into the courts, and in 1927 the United States Supreme Court decided, in the case of *Florida v. Mellon*, that Florida should be denied leave to file its bill of injunction to prevent the government from the collection of the Federal estate tax in Florida. The legal question settled, the attention of the citizens turned towards a better adjustment of the credit question. In 1930, at the regular election, it was voted to repeal the constitutional provision against inheritance taxes to the extent necessary to enable the state to take advantage of the Federal 80 per cent credit provision. The law itself declares, under the caption "Purpose of Statute," that its purpose is to provide a "tax, not exceeding in aggregate the amounts made by any law of the United States, but allowed to be credited against or deducted from any similar tax or taxes upon estates or levied by the United States on the same subject."

The tax law which this vote made

possible was promptly passed. It was approved on May 16, 1931, and made retroactive in that it applies to the estates of decedents dying after Nov. 4, 1930, the date when the vote on constitutionality was taken. The Florida law follows the lines of the Federal estate tax law. It is an estate tax, not a tax on inheritance or succession. The rates, like those of the Federal tax, begin at 1 per cent on the first \$50,000 of taxable estate (above the exemption of \$100,000) and rise to 20 per cent on the net estate above \$10,000,000. The Florida tax is credited with the amount of the net tax imposed by the Federal government on the same estate.

STATE TAX RECIPROCITY

Reciprocity in inheritance taxation made progress in 1931. Reciprocity represents the attempt of states which use inheritance taxes to avoid the evils of the multiple taxation of intangibles, by agreeing to exempt from taxation intangible personal property left by non-resident decedents to the extent to which the state in which the decedent was resident reciprocates. At the beginning of 1931 there were still eleven non-reciprocal states. In the legislative sessions of the first half of the year the states of North Dakota and Nebraska adopted reciprocity. South Dakota took the action through rulings of its tax department. Reciprocity movements were also apparent in Kentucky and Louisiana. The year was also characterized by movements for the simplification of inheritance taxes, and by a general tendency to consider increases in rates.

AUTOMOBILE TAXES

By BEULAH BAILEY

LIBRARIAN, NEW YORK STATE DEPARTMENT OF TAXATION AND FINANCE

REGISTRATION FEES

Changes in Measure.—With the advent of the motor truck and trailer combine, bearing close resemblance to an abbreviated freight train, states are

being forced to enact adequate legislation to meet the present situation. Colorado, North Carolina, North Dakota and Washington have changed the measure of the registration fee.

VII. PUBLIC FINANCE AND TAXATION

In North Carolina it was from horse power to weight; Colorado from cost price to weight; North Dakota from selling price, weight and horse power to weight and age with a flat rate on trailers of \$5 per ton of load capacity and on passenger carriers of \$7 per passenger. Washington has adopted the flat rate of \$3 for pleasure cars, for passenger carriers \$3 plus \$3 per seat and for trucks and trailers \$3 plus \$.50 per hundred weight for the maximum load.

Commercial Cars.—Illinois increased the fee for freight carriers from \$1 to \$1.50 per 100 pounds of gross weight. The fees on trailers range from \$10 to \$250 plus, formerly \$6 to \$100; and for semi-trailers from \$6 to \$175. Iowa levied a fee for truck tractors ranging from \$75 to \$240 plus \$50 for each ton over 6. In Nebraska trucks formerly ranged from \$8 to \$115, now the range is from \$10 to \$225. Commercial trailers are half the truck fee. In South Dakota the fees on trucks have increased from a range of \$15 to \$75 to one of \$15 to \$400 plus. Trailers and semi-trailers formerly the same as commercial cars, now range from \$1 to \$500. Vermont changed the registration fee of trailers and semi-trailers from a flat rate to gross weight. The trailer fee in Idaho is \$1 up to 1500 pounds plus \$1 for each 100 pounds over 1500. A trailer operated in connection with a commercial truck pays 50% of the truck fee in addition to the trailer fee. Florida, New Mexico, North Carolina and Wisconsin have also increased their rates on commercial cars. Arkansas, New Mexico, Oregon, Tennessee and Texas have made special provisions for trailers transporting farm produce and camping outfits.

Passenger Cars.—Registration fees on passenger cars have been increased in North Dakota, New Mexico, Ohio and South Dakota. Wisconsin abolished the personal property tax on all motor vehicles. A certain percentage of the license fees will be returned to the localities to compensate them for the loss of the personal property tax.

TAXATION OF COMMON CARRIERS

Legislation.—Nine states enacted laws for regulation and additional taxation of common carriers. Alabama, Colorado, Georgia (in lieu of a former tax), Kansas, Pennsylvania and Wyoming levied excise taxes on common carriers. It is a mileage tax in all of these states except Pennsylvania where the excise tax is levied on the gross receipts and in Georgia where it is a flat rate tax on intrastate business but a mileage tax on interstate business. Wisconsin extended its former ton mile tax to include motor vehicle hauling companies. Montana, Michigan and New Mexico require all classes of carriers to be licensed by their respective public utility commissions.

Collections.—Many states are still experiencing difficulties in the collection of the gas tax. This year California, Illinois, Michigan, New Hampshire and Vermont are for the first time requiring distributors to be bonded. In Pennsylvania the minimum amount of a bond was increased from \$500 to \$2500. The gasoline tax law of Pennsylvania has been completely rewritten. The tax is now on the distributor. California requires monthly payment instead of quarterly. Wisconsin requires all dealers to be licensed.

Exemptions and Allowances.—Maine, New Hampshire, Ohio and Vermont make allowances for evaporation and wastage. Vermont, Maine and New Hampshire allow a tare of 1 per cent, while Ohio allows 3 per cent of the total tax. Colorado, Kansas and New Mexico enacted legislation exempting gasoline used for purposes other than propelling motor vehicles upon the highway.

AUTOMOBILE TAX REVENUE

During 1930, 14,751,308,978 gallons of gasoline were consumed in the United States and the tax amounted to \$494,683,410, an increase of \$63,000,000 over 1929. \$355,794,860 was collected in registration fees, licenses and miscellaneous automobile taxes in 1930, an increase of \$7,500,000 over 1929. Available 1931 figures show that

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

while during 1931 there has been a decrease in the demand for cars, yet there has been an increase over 1930 in the amount of gasoline consumed.

STATE GASOLINE TAX RATES

(As of December 31, 1931)

State	Cents	State	Cents
Alabama	5	Nevada	4
Arizona	5	New Hampshire	4
Arkansas	6	New Jersey	3
Colorado	4	New Mexico	5
Connecticut	2	New York	2
Delaware	3	North Carolina	6
District of Columbia	2	North Dakota	4
Florida	7	Ohio	4
Georgia	6	Oklahoma	5
Idaho	5	Oregon	4
Illinois	3	Pennsylvania	3
Indiana	4	Rhode Island	2
Iowa	3	South Carolina	6
Kansas	3	South Dakota	4
Kentucky	5	Tennessee	6
Louisiana	5	Texas	4
*Maine	4	Utah	4
Maryland	4	Vermont	4
Michigan	3	Virginia	5
Minnesota	3	Washington	5
Mississippi	5½	West Virginia	4
Missouri	2	Wisconsin	4
Montana	5	Wyoming	4
Nebraska	4		

* Legislature increased tax to 5 cents.

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

(For further information, the reader may address the following organizations)

NATIONAL TAX ASSOCIATION, 195 Broadway, New York City.	NORTH AMERICAN GASOLINE TAX CONFERENCE, Indianapolis, Ind.
NEW ENGLAND STATE TAX OFFICIALS ASSOCIATION, State House, Boston, Mass.	WESTERN STATES TAXPAYERS ASSOCIA- TION, Denver, Colo.

DIVISION VIII

PUBLIC RESOURCES AND UTILITIES

FEDERAL SURVEYS AND MAPS

By JOSEPH H. WHEAT,

SECRETARY, FEDERAL BOARD OF SURVEYS AND MAPS

FEDERAL BOARD OF SURVEYS AND MAPS

Organization.—The Board of Surveys and Maps of the Federal Government was created by Executive order Dec. 30, 1919, for the purpose of making recommendations to the several executive departments or to the President, in order to coordinate all map-making and surveying activities of the Government. Twenty-five Government services are represented on the Board. The Advisory Council to the Board is composed of representatives from 23 associations and societies of engineers, geographers, geologists, etc., interested in surveys and maps.

Map Information.—The map information office of the Board was established in 1920 for the purpose of collecting, classifying, and furnishing to the public information concerning all map and survey data available in the several Government departments and from other sources.

Meetings of the Board are held on the second Tuesday in each month except June, July, and August. At these meetings, all of which are open to the public, matters of general mapping interest are discussed and reports of committees are presented and acted upon.

MAPPING AND SURVEYING SERVICES

The Geological Survey is the most productive of the mapping organizations, as it is engaged in making the basic topographic map of the entire area of the United States. It

is also engaged in making a geologic map of the United States and Alaska, involving both topographic and geologic surveys. In conducting investigations relating to surface and underground waters, classifying the public lands and supervising the engineering phases of mineral leasing, the resulting maps are incidental.

The Coast and Geodetic Survey is one of the oldest surveying bureaus of the Government. It is charged with the survey of the coasts of the United States and its possessions and with the publication of navigational charts of those regions. It is also charged with the determination of geographic positions by astronomic observations and by triangulation and traverse, and with the determination of elevations by spirit leveling in the interior of the United States and Alaska.

The General Land Office is the oldest surveying and mapping bureau of the Government. (See *THE AMERICAN YEAR BOOK*, 1929.) This bureau makes rectangular surveys of public lands, which are published in the form of township plats. The bureau issues annually a wall map of the United States showing the extent of the public surveys, national parks, national monuments, national forests, Indian, military, bird, and game reservations, and other useful information. It also issues maps of the 29 public-land states, and of Alaska and Hawaii.

The Hydrographic Office is charged with topographic and hydrographic surveys in foreign waters and

FEDERAL SURVEYS AND MAPS

on the high seas, and in the preparation and printing of maps and charts required in navigation on those waters.

The Corps of Engineers makes special topographic maps of areas of military importance and has made topographic maps of a few quadrangles not surveyed by the Geological Survey, besides revising some of the older topographic maps of the Geological Survey.

The Forest Service publishes general maps of national forests and topographic maps of portions of them.

The Bureau of Reclamation publishes topographic maps of many of the Federal irrigation projects.

The Office of Indian Affairs has mapped portions of the Indian reservations.

The Mississippi River Commission has published a series of maps showing the profile of the river and the topography along the shores, extending from the source to the mouth of the river.

The International (Canada) Boundary Commission has published a series of topographic maps extending approximately 1 mile on each side of the United States-Canada boundary line and along the east boundary of Alaska.

The Lake Survey publishes hydrographic charts of the Great Lakes for navigational uses.

The Topography Branch of the Post Office Department compiles post-route maps for all the states, Alaska, Hawaii, the Samoan Islands, Guam, Canal Zone (Panama), Porto Rico, and the Virgin Islands. It also compiles rural free delivery maps of many of the counties in each of the states.

The Bureau of Chemistry and Soils publishes maps which show the character of the soils in the areas covered. A single soil map will usually cover the area of a county.

The Bureau of Public Roads publishes maps of the United States showing the Federal-aid system of highways and also maps of some of the states carrying more detailed information of the same character.

TRIANGULATION AND LEVELING

The plan for the standard topographic mapping of the United States calls for a complete network of triangulation based on the standard (North) American datum. The geographic position of Meade's Ranch in Nebraska, is the accepted datum for the North American Continent, as the United States, Canada, and Mexico have adopted it and have made their position adjustments to conform to it. The plan also calls for spirit level elevations based on mean sea level. The existing first and second order triangulation and leveling have generally been executed by the Coast and Geodetic Survey, but the Lake Survey has executed first-order triangulation along the shores of the Great Lakes with other connecting lines. Third-order triangulation and leveling in the interior of the country has been done by the Geological Survey and the Corps of Engineers. The Mississippi River Commission has established many third-order triangulation stations and level bench marks along the Mississippi River. The International (Canada) Boundary Commission has established numerous first-order triangulation stations to fix the boundary between the United States and Canada. Horizontal and vertical control work of this character accomplished during the past year is given in the summary of the year's work.

AERIAL PHOTOGRAPHY

Utility of Photographs.—The Geological Survey, the Coast and Geodetic Survey, the Corps of Engineers, the Hydrographic Office, and the Forest Service are particularly interested in the developments of cameras and methods to obtain greater accuracy in photographs and to facilitate their use on map work. Aerial photographs are especially valuable in standard topographic mapping, being used by the Geological Survey on this work to a large extent in compiling planimetric bases for use in the field. They are also used as an aid in making military maps of the several types required for defense, the

VIII. PUBLIC RESOURCES AND UTILITIES

training of troops, the practice of artillery firing, and other military activities, as well as for use in the charting of coast lines and stretches of coastal country difficult and tedious to survey by ground methods. The Air Services of the Army and Navy supply aerial photographs for use by Government agencies in mapping, but some of the work of this kind has been contracted for by commercial firms.

Types of Cameras in Photographic Mapping.—The photographs are made with especially designed roll-film cameras. These are of two kinds, single-lens and multiple-lens. Single-lens cameras are used in connection with mapping large cities and areas of comparatively flat country, more particularly where the public-land survey lines are well marked on the ground by roads and fences, which afford additional control for the adjustment of photographs taken with cameras of this type. The multiple-lens cameras employed at present in photographic mapping have many advantages owing to the large area photographed at each exposure. These advantages are so great that they more than offset the slight indistinctness shown at the outer edges of some of the photographs. The multiple-lens cameras are constructed with either three or four lenses each. The four-lens camera may be considered a tri-lens camera to which has been fitted an additional, detachable lens unit. A five-lens camera has recently been developed at Wright Field. Experimental tests with this camera have proved successful in covering a very large area on the composite photograph when taken at a high altitude. Photographs taken with the five-lens camera of 6-inch focal length at an altitude of 19,000 feet cover an area in the form of a Maltese cross 19 miles square.

Stereoscopic Mapping.—Topographic mapping by the stereo-photogrammetric method, using the aerocartograph in constructing maps from aerial photographs, was carried on continuously throughout the year by the Geological Survey. A series of map sheets covering the Columbia

River Valley from the international boundary to a point near Pasco, Washington, was finished for the U. S. District Engineer. Areas in Zion National Park difficult to map by ground methods were also completed. The application of this method of mapping inaccessible areas will be continued whenever it is feasible to obtain photographs of suitable quality and accuracy. The Geological Survey is the only mapping agency, either Governmental or commercial, making practical use of the method at the present time.

Photographic Mapping.—Line map bases constructed from aerial photographs by the Geological Survey during the fiscal year ended June 30, 1931, embraced areas aggregating 6,847 square miles. Guide maps for control parties, covering 1,900 square miles, were compiled. The output of topographic mapping with the aerocartograph was 300 square miles. The Hydrographic Office in connection with surveys obtained aerial photographs of approximately 920 nautical miles of coast line in the West Indies. At the request of the Governor of Porto Rico, about 2,000 square miles of the area of Porto Rico were photographed by a Naval aerial photographic unit. The Forest Service made use of aerial photographs on 700 square miles of drainage surveys. The Coast and Geodetic Survey made extensive use of aerial photographs in new chart work along the Florida coast. This bureau is also very much interested in the development of the five-lens camera and is working in cooperation with the Geological Survey and the Materiel Division at Wright Field in order to test its accuracy on work requiring a rigid adjustment of detail in areas difficult to control by ordinary ground methods.

CURRENT SURVEYS

The Geological Survey mapped during the fiscal year ended June 30, 1931, areas in the several States aggregating 12,830 square miles, making the total area mapped to date 1,350,553 square miles. Resurveys covered 4,271 square miles, and revision 1,182 square miles. Control surveys

STATE GEOLOGICAL SURVEYS

consisted of 9,707 miles of spirit levels, 7,065 miles of transit traverse, and the occupation of 183 triangulation stations.

The Coast and Geodetic Survey completed a total of 92,548 square miles of hydrographic surveys and a total of 1,785 square miles of topographic surveys in the United States, Alaska, Hawaiian Islands, and the Philippines. An area of 34,000 square miles was covered by first-order triangulation and 5,737 miles of first-order levels were run. Triangulation of second and third order covered 5,197 square miles.

Other Surveys.—The Hydrographic Office surveyed a total area of approximately 4,370 square miles. The General Land Office accepted original surveys and resurveys aggregating 3,618 square miles. The Bureau of Chemistry and Soils completed 28,530 square miles of soil surveys. The Forest Service completed 1,373 square miles of drainage surveys. Topographic mapping of standard accuracy totaled 906 square miles. The Corps of Engineers surveyed areas which included 344 square miles in continental United States and 247 square miles in Panama.

STATE GEOLOGICAL SURVEYS

BY GEORGE C. BRANNER

STATE GEOLOGIST, ARKANSAS

GENERAL

Survey Expenditures.—As an aid to the development and conservation of their varied mineral resources, all but seven states maintained active geological surveys as part of their governmental structures during 1931. The expenditures of these surveys during the fiscal year 1931-1932 were approximately \$1,381,357. This figure was increased by approximately \$1,523,419 by Federal, state, county, and local organizations and individuals cooperating with either Federal or state surveys, which made a total cooperative sum devoted to state mineral development and conservation of approximately \$2,904,776.

Personnel and Projects.—Approximately 88 full time geologists and 345 part time geologists and otherwise technically trained men were engaged in carrying on 447 survey projects. These included geologic, topographic and soil surveys, stream gaging and miscellaneous projects. Publications for the year included 326 technical reports and maps.

BASIC GEOLOGY

Alabama published reports and continued studies of Tertiary strati-

graphy and the crystalline rocks, and published a report on the foraminifera of the Ripley formation. Arizona continued correlation studies. Arkansas continued a study on the porosity of the Paleozoic sandstones and limestones. California began work on the geology of the Covello region, of Humboldt County, the Lucia quadrangle and on northern California; continued studies in the geology of the Weaverville, Clear Lake, Searles Lake and Elizabeth Lake quadrangles, and on San Bernardino, Sonoma and Mono counties, and continued the compilation of a state geologic map.

Colorado continued cooperative geologic studies. Connecticut continued a study of the bedrock geology. Florida began studies of the molluscan fauna of the Tampa formation, the foraminifera of the Alum Bluff formation; continued studies of and published reports on deep wells, the petrography of the Tertiary and Quaternary formations, and the stratigraphy of the Choctawhatchee formation; and completed studies of the Pelecypods of the Choctawhatchee formation and the Pleistocene mastodons and mammoths. Georgia carried forward geologic mapping and

VIII. PUBLIC RESOURCES AND UTILITIES

began publication of a map of the crystalline rocks of the state.

Idaho continued geologic work on the Muldoon quadrangle, completed mapping the areal geology of Latah County, the Newsome, Yellow Pine, and Bayhorse quadrangles, and completed a report on Cassia County. Illinois continued studies on the petrography of the clays and shales, the paleontology and stratigraphy of the Silurian, Mississippian, Pennsylvanian systems and the Pleistocene series, the Paleobotany of the Pottsville formation, the morphology of Pennsylvanian plants, the fusulinas of the Pennsylvanian system, and the ostracods of the Chester series.

Indiana began studies of subsurface stratigraphy, the Borden series of southern Indiana, the insoluble residues of the Mississippian limestone and began publication of a state geologic map. Iowa began a study of the Pleistocene mammals, and revision of the state geologic map, and continued studies of glacial gravels, Illinoian and post-Illinoian geology, the Devonian plants of Interglacial deposits, the Silurian, and the paleontology of the Kinderhook stage. Publication of reports on the Pleistocene geology of northwestern Iowa, the Dakota stage of the type locality, the stratigraphy of the Kinderhook stage, and a new specimen of a Paleoniscid brain from Iowa was begun.

Kansas began mapping and undertook stratigraphic studies of the Pennsylvanian, Permian, Cretaceous, Tertiary, and Quaternary rocks and began the compilation of an areal geologic map of the state. Work was continued on the stratigraphy and paleontology of the Graneros, Greenhorn, Carlile, and Niobrara formations, the subsurface geology of Forest City Basin, the stratigraphy of the Dakota series and the areal geology and stratigraphy of Johnson and Miami counties. Reports were completed on the geology of Wallace, Wyandotte, Ness, and Hodgeman counties, and on the fauna of the Drum limestone of Kansas and western Missouri.

Kentucky prepared for publication reports on the urban geography of Louisville, geology of Hancock County, insoluble residues of the Mississippian limestones, discovery of the Big Bone Lick and the Tertiary deposits of western Kentucky; published reports on the geology of the Jackson Purchase region, Henderson County, the Smithland and Eddyville quadrangles, the Mississippian Plateau, and published detailed county maps for the 39 counties in the Bluegrass region. Maine began the compilation of a state geologic map. Michigan continued studies of the Niagaran rocks, the Devonian, and Carboniferous rocks, surface and glacial geology, and completed a study of the Ordovician rocks. Publication was begun on reports on the Ordovician, Niagaran, and Pennsylvanian limestones, the fauna of the Ordovician, and the sand dunes.

Minnesota is publishing a state geologic map. Mississippi is publishing a report on Eocene stratigraphy. Missouri began a study of the geology of Lawrence County and carried on the study of insoluble residues. Montana began publication of a state geologic map and reports on the structure and stratigraphy of northwestern Montana and the geology of Cooper's Lake quadrangle.

Nebraska began a study of county geology, continued a study of the Pennsylvanian and Pleistocene, continued work on the state geologic map, and is publishing a bulletin on the Brachiopoda, Cephalopoda, and Bryozoa of the Pennsylvanian, and a bulletin on the geology of Pawnee and Richardson counties. Nevada completed the geologic mapping of the south half of the Lovelock quadrangle. New Jersey is revising the state geologic map. New York began publication of a handbook of paleontology (Part II), reports on the graptolites of North America, the structure of the Devonian strata of south-central New York, the geology of the Capitol district, and on the Berne, Oswegatchie and Cattaraugus quadrangles.

Ohio began a survey of Lorain

STATE GEOLOGICAL SURVEYS

County and continued a study of the corals of the Devonian and the collection of samples of brine, began publication of a bulletin on the geology of Holmes County, and published a bulletin on the geology of Jefferson County.

Pennsylvania began work on the Smicksburg quadrangle, continued studies of Silurian and Devonian stratigraphy, the terrace deposits of Susquehanna County, the glacial history of the Wyoming and Delaware valleys, the geology of Fayette County; continued the detailed mapping of the Brooksville, Confluence, Donegal, York, and Hanover quadrangles, and completed the geologic mapping of the Meyersdale and New Cumberland quadrangles. Publication was begun of a state geologic map, and of atlases of the Freeport, Curwensville, and New Cumberland quadrangles. A general description of the geology of Pennsylvania was published.

South Dakota continued work on the state geologic map. Tennessee is publishing bulletins on the stratigraphy of the Central Basin of Tennessee, foraminifera, the Knoxville to Bristol area, and a state geologic map. Texas published papers on erratics in the Pennsylvanian, major structural features of west Texas, new early fusulinids from Texas, Upper Cretaceous ammonites in western Texas, the Lower Claiborne on the Brazos River, Cretaceous foraminifera, and the geology of Grayson County.

Virginia began studies of the Warrenton quadrangle, the geology of the lower Williamsburg Peninsula, continued studies of the stratigraphy and structure of the Appalachian Valley, the Piedmont province, published reports on the geology of the lower Williamsburg peninsula, and a geologic map of the Appalachian Valley. Vermont continued the study of metamorphic rocks and Cambrian geology. Washington carried on studies of the stratigraphy of the northern Cascades, the petrography of the Columbia basalts, and the geology of the Chewelah quadrangle. West Vir-

ginia completed work on the stratigraphy of Greenbrier County and is publishing a state geologic map.

ECONOMIC GEOLOGY

Alabama continued a study of the mineral resources of the northern part of the state. Arizona published a report on the state mineral industries. Arkansas began the construction of a state relief model and prepared a statistical report of mineral production and producers.

California continued studies of Madera County, the Grass Valley district, and the Hetch Hetchy Tunnels; published a report on American mining law, a bibliography of the geology and mineral resources of California, an annual statistical report of mineral production of California for 1930, a synopsis of mining law, and four quarterly chapters of the State Mineralogist's annual report. Connecticut and Florida each began the publication of a report on the state mineral resources. Iowa began the collection of mineral production statistics.

Illinois continued magnetometer and electrical resistivity studies, studies of subsurface correlation for well drillers, the geology and mineral resources of 21 quadrangles and the Chicago area; published reports on the structure of parts of Jersey, Greene, and Madison counties; published a mineral industries map, a directory of mineral operators, a report on the geology of the Pickneyville and Jamestown areas and on the mineral wealth of Illinois, and a paper on typical rocks and minerals of the state.

Kansas continued the construction of a state relief model. Kentucky completed reports on the Big Barrens and the influence of geography and geology on industrial development. Maine began a survey of the quarries of the state, and of the sand and gravel resources and began publication of a report on the geology of Maine. Michigan began publication of reports on the economic geology of Montmorency and Schoolcraft counties and continued the collection,

compilation, and publication of mineral resource data. Minnesota began publication of a report on the state mineral resources.

Missouri began a study of the geology of Lawrence County, continued electrical resistivity surveys of sink deposits and of highway excavation. Nevada made a mineral survey of the Hoover Dam area and published reports on mining districts and state mineral resources. New Jersey continued the collection of mineral statistics and geological data. New York began the publication of reports on the state mining and quarrying industries, a guide to the geology of John Boyd Thacher Park, and miscellaneous geological papers.

Pennsylvania began a study of mineral resources of Fayette County, continued studies of the state non-metallic and other resources, and began publication of a general description of the state geology, a report on the geology and mineral resources of Adams and Greene counties, and a syllabus of the geology and mineral resources of the state.

Virginia began studies of the geology and mineral resources of the Hot Springs district, of the Warrenton quadrangle, continued studies of the geology and mineral resources of the state by counties and the geology of the natural wonders; carried on studies of the geology and mineral resources of Bath, Goochland, Prince George, Surry and Sussex counties, and of Natural Bridge Special quadrangle; published reports on the state caverns, the mineral industry in 1930, and the physical features of Virginia. West Virginia completed field work on Randolph and Greenbrier counties and published a report on Randolph County. Wisconsin completed field work on the Keweenawan rocks of northern Wisconsin.

FUEL MINERALS

Oil and Gas.—Arizona issued a bulletin on petroleum. Arkansas continued the preparation of a report on the oil and gas possibilities of the Gulf Coastal Plain. Illinois contin-

ued work on the western Lawrence County and northern Crawford County oil fields, studies of oil field waters, improved methods of oil recovery, and sand cores; continued work on the need for sand coring in southern Illinois oil fields, and published a paper on mud fluid materials and state petroleum developments in 1929 and 1930. Kansas began an investigation of the state natural gas resources. Kentucky completed a study of natural gas in eastern Kentucky. Michigan continued a study of well records and subsurface formations, continued oil and gas well supervision and the investigation of oil companies, and began the publication of a bulletin on oil and gas resources. Mississippi continued the compilation of data on oil and gas developments. Montana completed a study of the state natural gas resources. Nebraska published a report on deep wells.

New Mexico began the publication of a report on the state oil and gas resources and issued a state oil and gas map. North Dakota continued investigations of oil and gas conditions. Ohio continued a study of oil and gas well records. Pennsylvania continued a study of deep well records and general studies on oil and gas and began publication of a report on the oil and gas fields of western Pennsylvania; published the results of special studies in the gas fields of northeastern Pennsylvania, the Bradford oil field, and of the correlation of oil sands with outcropping rocks. South Dakota published a report on the oil and gas possibilities of western Potter County and on the Chilson and Cascade anticlines. Washington carried on an investigation of the state oil and gas possibilities. West Virginia carried on investigations in the oil and gas fields of Wetzel County.

Coal.—Alabama continued a study of the Warrior coal field. Illinois continued work on a comprehensive report of the coal fields, the ash-making constituents of coal, their properties and behavior in combustion,

RECLAMATION AND IRRIGATION

and is publishing a bulletin on the analyses of face samples of coal. Pennsylvania continued general studies of coal deposits and published a second edition of *Coal Fields of Pennsylvania*. South Dakota continued a coal investigation and published a report on the Isabel-Firesteel coal region. West Virginia continued a study of the coal fields of McDowell County and began publication of a report on the coal fields of Monongalia County.

METALLIC MINERALS

Alabama continued studies of brown iron ore and bauxite. Arizona continued investigations of the geology and ore deposits of the Patagonia district, Jerome quadrangle, and southern Yuma County, and issued reports on the geology and ore deposits of the Oatman and Katherine districts. Arkansas began a study of the cinnabar deposits of Pike County. A cooperative study of the zinc and lead district of northern Arkansas is being published by the Federal Survey. California began a study of the Bodie mining district. Idaho began the publication of a bulletin on the elementary methods of placer mining.

Michigan continued magnetic and geological surveys in the copper and iron districts and continued the appraisal of copper and iron mines for the State Tax Commission. Minnesota began the publication of a report on the alteration of iron ore deposits. Missouri continued magnetometer surveys in the Joplin, the red iron ore districts, and Lawrence

County and continued electrical resistivity surveys of iron ores.

Montana continued the study of flotation problems and began publication of reports on the geology and gold resources of the Tobacco Root Range, of Broadwater, Beaverhead, Phillips, and Judith Basin counties, on the placer gold in the Missouri River between Fort Benton and Judith, and on the age-hardening of metals. Nevada continued a study of the Tybo and Searchlight districts, completed studies of the ore deposits at Cave Valley, Lincoln County, and of the bedded manganese deposits near Las Vegas, and is publishing reports on the Eldorado Canyon, Delamar, Eureka, and the Scossa mining districts, and the ore deposits of the Gold Circle mining district.

New Mexico carried on investigations of the geology and ore deposits of Sierra County, the lithium and other deposits near Dixon, Taos County, the Central district, Grant County, the Virginia mining district, Hidalgo County, and the Magdalena district, Socorro County; began publication of bulletins on the geology and ore deposits of Socorro County and the state metal resources. North Carolina began a study of copper deposits. Tennessee is publishing a report on the brown iron ores of the Western Highland Rim. Virginia carried on studies of the Cambrian hematite deposits in the Blue Ridge, and the Oriskany iron deposits in western Virginia, and published reports on the geology of the New River zinc district and the geology of the James River iron belt.

RECLAMATION AND IRRIGATION

BY HUGH A. BROWN

DIRECTOR OF RECLAMATION ECONOMICS, DEPARTMENT OF THE INTERIOR

BOULDER CANYON

Hoover Dam Contract.—The outstanding administrative action during the year in relation to reclama-

tion was the award of the contract on March 11 to the Six Companies, Incorporated, of San Francisco, and its approval by the Secretary of the In-

VIII. PUBLIC RESOURCES AND UTILITIES

terior on April 20 for the construction of Hoover dam, power plant, and appurtenant works on the Boulder Canyon Project, at the bid price of \$48,890,995. This is the most important and difficult construction job on the project and includes the 730-foot dam, the four 50-foot diameter diversion tunnels, cofferdams, spillways, outlet works, and the power plant, exclusive of installation of power machinery. The construction period will be about 6½ years. In general, the Government will purchase and furnish to the contractor for installation all materials which will enter into the completed work, including the more important items of cement, reinforcement steel, pipes and fittings, plate-steel conduit linings, gates and hoists, needle valves, and structural steel. The total estimated cost of the work covered by the contract, including all materials is about \$76,000,000. The power machinery and its installation will cost an additional \$15,000,000.

Railroad Contracts.—Other contracts completed were the construction of a 22.7 mile railroad from near Las Vegas, Nev., to Boulder City; one 10 miles long from Boulder City to the damsite; and another 20 miles long, one branch of which runs from the 10-mile Government railroad to the boat landing on the river and thence along the Nevada canyon wall to the outlets of the diversion tunnels, and a second branch, 12 miles long to the deposit of sand and gravel in Arizona.

Other Contracts.—Contracts were also completed covering the erection of a transmission line, to furnish power for construction, from Victorville, Calif., to the damsite, a distance of 235 miles, and the construction of a 7-mile highway 24 feet wide from Boulder City to the damsite.

Boulder City.—Work was progressing at the tunnels and at the new town of Boulder City which will house the employees of the Government and of the contractor, together with those who wish to engage in business or to follow their trades or practice their professions. Contractors were actively engaged on street grading and paving, and the installation

of curbs and gutters, sidewalks, sanitary sewers and a water distribution system. Permanent houses were being erected for Government employees, and more temporary structures to house and feed the men employed on the work. The town is at an elevation of 2,500 feet, or about 1,000 feet higher than the top of the canyon wall at the damsite, affording later on a view of the 145,000-acre reservoir four miles away. Water for domestic use is pumped 2,000 feet from the Colorado River and carried through a 9-mile pipe line to Boulder City, with every precaution taken to insure its purity before consumption.

Appropriation.—Fifteen million dollars was appropriated for continuing work under the act during the fiscal year ending June 30, 1932.

CONSERVATION AND ADMINISTRATION OF PUBLIC DOMAIN

President's Committee.—This committee, appointed in 1930 by the President to make a study of and report on public domain problems, including the policy of Federal reclamation, submitted its report to the President early in 1931. There was general approval of the present conservative policy of constructing worthy projects only after exhaustive investigations, both engineering and economic, have determined their feasibility. The committee called attention to the fact that repayments from water users comprise the chief source of revenue to the reclamation fund at present and that the primary factor therefore is the safeguarding of project payments. A secondary factor is the insurance of the future maintenance of accretions from the royalties received under the mineral leasing act. The Committee recognized that one potential source of revenue to the reclamation fund is power development at the dams and at drops in the canals on the irrigation projects. At present there is no definite policy as to the construction of power plants or the disposition of the income. Originally power plants were built to furnish power needed for construction and were at that time not expanded beyond that point. Their cost was in-

RECLAMATION AND IRRIGATION

cluded in the cost of construction of the project to be repaid by the water users. Later, the demand for expansion of power development to meet the needs of nearby towns resulted in a largely increased income from power which under the law was applied against the annual payments of the water users. As a result, on some projects practically the entire annual construction repayments are being paid from power income and the favored individuals on these projects will continue to receive these power dividends perpetually, even after all construction payments have been made. This inequitable situation has led to the enactment of special legislation providing that on two or three projects the net revenues from power development shall be applied first to repay the cost of the power plant and appurtenant works; second, the cost of the reservoir and dam which regulate the delivery of water to the plant; and after that, all net revenues should be credited to the reclamation revolving fund. The committee recommended that this be made a definite policy for all future hydroelectric development on the Federal irrigation projects.

RECLAMATION FUNDS AND DISTRIBUTION

The Appropriation Act.—The Appropriation Act of February 14, 1931, for the fiscal year ending June 30, 1932, together with unexpended balances from previous appropriations, power revenues, and funds advanced by the water users, made available for reclamation \$11,400,700, distributed as follows: storage system, \$3,747,000; canal system, \$2,578,000; operation and maintenance, \$2,188,200; lateral system, \$827,900; drainage system, \$514,000; power system, \$430,000; examination and surveys, \$290,600; irrigable land surveys, \$26,500, and miscellaneous, \$798,500. Among the larger and more important items specifically mentioned are \$1,483,000 for continuation of construction of Owyhee dam in eastern Oregon and \$1,485,000 for the construction of the canal system on the same project; \$1,200,000 for the storage division of the Yaki-

ma project, Washington; \$389,500 for the canal system and \$388,000 for the lateral system on the Kittitas division of the Yakima project; \$300,000 for the canal system and \$250,000 for the lateral system of the Gooding division of the Minidoka project, Idaho; and \$200,000 for the canal system of the Sun River project. The act also carries an item of \$50,000 for economic work, including soil surveys, land classification and settlement activities, and, for the first time \$25,000 was made available for the employment of economic advisers to give information and advice to settlers in the selection and preparation of land, methods of irrigation and agricultural practice, and general farm management.

Trip of Appropriation Committee.—During the summer of 1931 members of the Sub-Committee on Appropriations for the Interior Department, of the Committee on Appropriations of the House of Representatives, made an extensive trip over a number of the Federal irrigation projects, visiting 7 completed projects, 7 under construction and 6 proposed for construction, the purpose being to obtain first-hand knowledge of conditions in order to determine the amount of public money required by these reclamation activities and to direct its wise expenditure.

Finances.—Two conditions were responsible for the depletion of the reclamation revolving fund early in the year to a point where it was necessary to call on the General Treasury for additional working capital or reduce construction to a minimum. There was a decided falling off in repayments by the water users, which now constitutes the source of the major amount of accretions to the fund. This was due to the general agricultural depression and the low prices for farm products. Furthermore, the open winter permitted contractors to carry on construction at an unprecedented rate, thus still further reducing the available capital. These unforeseen conditions forced the Bureau to request a moratorium of two years on the repayment to the General Treasury of \$1,000,000 a year on the \$20,-

VIII. PUBLIC RESOURCES AND UTILITIES

000,000 bond loan, and later to ask for a loan of \$5,000,000 from the Treasury to continue construction under existing contracts. Acts were passed by Congress putting both these requests into effect, with the proviso, however, that repayment of the \$5,000,000 should begin in 1933 at the rate of \$1,000,000 a year, so that, beginning with that year the Bureau will repay to the Treasury \$2,000,000 a year from its construction funds, as it will again be repaying \$1,000,000 a year also on the original \$20,000,000 loan. All possible funds in sight for several years will, therefore, necessarily be absorbed in completing work under existing contracts, and little, if any, new work can be begun.

Income and Payments.—Construction payments in the fiscal year 1931 were \$4,794,833.32, an increase of \$1,563,301.25 compared with the previous year. Payments for operation and maintenance were \$1,426,138.04, or \$224,958.72 less than in the previous year. Total payments amounted to \$6,220,971.36 compared with \$4,882,628.83 in 1930, an increase of \$1,338,342.53. Income to the Bureau from all sources during the fiscal year was \$10,367,666.56, or \$1,332,158.21 more than in the previous year. The operation expense for the year was \$1,-

735,784.91, a decrease of \$50,413.74 from the previous year. Excess of operation and maintenance expense over receipts for the period amounted to \$309,646.87 compared with an excess of expense over receipts of \$135,101.89 for the previous year. The amount available for construction was \$11,860,000. The amount expended in construction was \$10,843,700 compared with \$8,611,400 the previous year.

The Bureau has expended for surveys and investigations, construction, operation and maintenance and incidental operations \$263,400,000 distributed approximately as follows:

Surveys and investigations not allocated to primary projects.	\$ 3,100,000
Construction of irrigation works, etc.	215,800,000
Operation and maintenance.	34,300,000
Incidental operations, plant and equipment, etc.	10,200,000
	<hr/> \$263,400,000

Receipts from the sale of public land last year amounted to \$635,290.72 and from royalties from oil leases to \$2,098,855.96.

Total funds made available for expenditure to the end of the fiscal year 1931, since the passage of the Reclamation Act of June 17, 1902, are summarized in the following table:

Accretions to the reclamation fund to June 30, 1931:		
Public land sales.	\$110,957,828.48	
Oil leasing receipts.	40,384,803.34	
Potassium Act receipts.	80,029.12	
Receipts under Federal Water Power Act.	271,423.78	\$151,694,084.72
Special appropriations.		<hr/> 5,582,746.08
Bond loan.	20,000,000.00	
Less repaid.	10,000,000.00	10,000,000.00
Treasury loan (act Mar. 4, 1931).		<hr/> 2,000,000.00
Collections from construction, operation and maintenance and incidental operations.		99,008,939.86
Total.		<hr/> 268,285,770.66
Disbursements.		263,417,107.36
Balance.		<hr/> 4,868,663.30

CONSTRUCTION RESULTS

Dams.—Two important dams were completed during the year, the Echo dam on the Salt Lake Basin project, Utah, and the Deadwood dam on the Boise project, Idaho. Contracts were awarded for the construction of the Cle Elum dam on the storage division of the Yakima project, Washington

and the Thief Valley dam on the Baker project, Oregon. The 405-foot Owyhee storage dam on the Owyhee project, Oregon, was under construction and excellent progress was made, so that the dam was about 90 per cent completed at the end of the year.

Canals, Tunnels, Bridges.—During the fiscal year 476 miles of canals,

RECLAMATION AND IRRIGATION

ditches and drains were completed making a total length to date of 17,467 miles. At the end of the fiscal year tunnels numbered 132 with a total length of 40 miles. Canal structures numbered 165,427, of which 3,958 were built during the year; bridges 12,194 with a total length of 56 miles; culverts, 15,787; and flumes 5,540. The bureau laid 4,436,952 feet or 840 miles of pipe. There were 1,461 miles of road constructed, 117 miles of railroad, 4,011 miles of telephone lines, and 3,226 miles of transmission lines.

Excavation.—The various construction activities have involved the excavation of 292,105,859 cubic yards of earth and rock. In building dams and other irrigation structures there have been placed 4,776,359 cubic yards of concrete, involving the use of 5,350,393 barrels of cement. Riprap totaled 2,570,254 cubic yards; paving 1,974,756 square yards; and gunite 912,096 square yards.

AGRICULTURAL RESULTS

Crop Value.—In 1930, the latest year for which statistics are available, the irrigated area of the Federal irrigation projects was 1,504,810 acres, an increase of 20,910 acres over that of 1929. The area cropped was 1,550,967 acres (of which 83,870 acres were dry-farmed), an increase of 38,717 acres. However, the gross value of crops grown on these projects was only

\$65,007,270, a decrease of \$23,452,120, owing to the low price of agricultural products. The average value of crops per acre in 1930 was \$41.90. In addition the Government irrigation works furnished water to 1,286,046 acres, of which 1,254,493 acres were cropped, producing crops valued at \$54,654,550, or \$18,065,940 less than in 1929. In other words, the total value of crops grown in 1930 on land receiving water from the works of the Bureau of Reclamation was \$119,661,820, or \$41,518,060 less than in 1929.

Crop Distribution.—Based on acreage, alfalfa was, as usual, the leading crop in 1930 on the Federal irrigation projects, being harvested on 452,526 acres representing 29.2 per cent of the total cropped area of 1,550,967 acres. Cotton was again second in area with 192,120 acres, or 12.4 per cent of the total, and wheat third with 135,201 acres or 8.8 per cent. Based on value, alfalfa hay took the lead for the first time in many years from cotton and cotton seed, the value of alfalfa hay being \$11,940,274, or 18.4 per cent of the total crop value of \$65,007,270 and that of cotton and cotton seed \$11,398,544, or 17.6 per cent. This was due of course to the marked decline in the price of cotton in 1930. Sugar beets stood third with a value of \$7,575,664 or 11.6 per cent of the total.

CROPPED ACREAGE AND VALUE, 1930

(Federal irrigation projects)

Crop	Acreage Cropped		Value		
	Total	Per Cent	Total	Per Cent	Per Acre
Cereals.....	323,650	21.0	\$ 5,182,487	8.0	\$ 16.03
Other grain and seed.....	43,576	2.8	1,466,010	2.2	33.60
Hay and forage.....	899,205	58.0	16,715,605	25.8	18.57
Vegetables and truck.....	131,312	8.4	11,957,525	18.4	91.20
Fruit and nuts.....	67,473	4.3	10,048,950	15.4	148.30
Sugar beets.....	79,897	5.1	7,575,664	11.6	94.70
Cotton (lint and seed).....	192,120	12.4	11,398,544	17.6	59.40
Other miscellaneous.....	47,025	3.0	662,485	1.0	14.10
Duplicated cropped acreage.....	233,291	15.0			
All crops for which detailed census was taken.....	1,550,967	100.0	65,007,270	100.0	41.90
Warren Act projects.....	1,254,493		54,654,550		43.56
Total.....	2,805,460		119,661,820		42.65

VIII. PUBLIC RESOURCES AND UTILITIES

Livestock and Equipment.—Livestock and equipment on the 24 operating Federal irrigation projects were valued in 1931 at \$37,323,764. The inventory showed 69,953 horses, valued at \$3,278,817; 10,085 mules, \$822,597; 65,368 beef cattle, \$2,731,223; 137,570 dairy cattle, \$8,715,381; 462,774 sheep, \$2,407,406; 78,404 hogs, \$689,513; 480 goats, \$2,354; 1,900 rabbits, \$2,243; 2,116,481 chickens, turkeys, ducks and geese \$2,016,163; and 36,312 hives of bees, \$204,980. Including the value of purebred and scrub sires of beef and dairy cattle and that of brood sows, the total value of domestic animals, poultry and bees amounted to \$21,423,609, and that of farm equipment to \$15,900,155, of which motor vehicles accounted for \$8,622,337.

Settlement.—Twenty-five projects were being operated in 1931. On these were 40,354 irrigated farms, whose population was 165,956; 213 cities and towns with a population of 472,723; 688 schools; 724 churches, and 120 banks, with deposits of \$134,261,170 and 226,014 project and non-project depositors. During the year 177 farm units were opened to entry on the Vale project, Ore.; the Pilot division of the Riverton project, Wyo.; the Willwood division of the Shoshone project, Wyo.; and the Greenfields division of the Sun River project, Mont. Practically all of these units had been

entered by qualified settlers at the end of the year.

Work in cooperation with the Economic Division of the Bureau of Reclamation to bring idle land into the hands of competent settlers was continued by a number of organized agencies on the projects, particularly the Lower Yellowstone Development Association on the Lower Yellowstone project, Montana-North Dakota; the Vale-Owyhee Project Land Settlement Association which is advertising the lands on those Oregon projects; the Kittitas Development Association which is bringing to prospective settlers the opportunities on the Kittitas division of the Yakima project, Washington, and the agricultural and industrial departments of the transcontinental railroads traversing the projects, all of whom are actively co-operating in the settlement work of the bureau. The Riverton project, Wyoming, still lacks adequate railroad facilities, but much can be done to aid the development of this project through the construction of good roads, and in this effort the bureau has received the support of the state. Steps have been taken on this project to appraise idle land in private ownership, with options running to the Government, for sale at low prices and on long terms to qualified settlers.

PUBLIC LANDS

BY CHARLES C. MOORE

COMMISSIONER OF THE GENERAL LAND OFFICE

GENERAL

Area and Demand.—It was stated last year that there had been a constant increase since the year 1926 in the area of land embraced in original appropriations, and the prolonged depression apparently has not lessened the demand, the figures for the fiscal year ended June 30, 1931, being 5,218,627 acres. And the area embraced in original homestead entries increased. It is worthy of note that over 94% of the area originally en-

tered and allowed was taken under the various homestead laws. During the past five fiscal years a grand total of nearly 21,000,000 acres has been allowed in homestead entries. At the close of the fiscal year 1931 there were embraced in pending unperfected entries, filings, and selections 24,241,042 acres as compared with 22,533,574 acres at the close of the year 1930. The area of the remaining vacant, unappropriated and

PUBLIC LAND

unreserved public lands, exclusive of Alaska, was 177,101,551 acres on June 30, 1931, located by States as shown in the following table:

States	Area in Acres		
	Surveyed	Unsurveyed	Total
Arizona.....	7,489,400	6,877,000	14,366,400
Arkansas.....	184,170	.....	184,170
California.....	10,833,154	5,213,794	16,046,948
Colorado.....	6,536,475	1,120,665	7,657,140
Florida.....	15,807	5,900	21,707
Idaho.....	9,676,675	1,809,252	11,485,927
Minnesota.....	193,090	.....	193,090
Montana.....	6,319,052	90,980	6,410,032
Nebraska.....	20,805	.....	20,805
Nevada.....	30,133,644	21,265,652	51,399,296
New Mexico.....	13,198,947	1,185,048	14,383,995
North Dakota.....	146,349	.....	146,349
Oregon.....	12,889,846	92,411	12,982,257
South Dakota.....	459,516	.....	459,516
Utah.....	13,533,638	11,623,362	25,157,000
Washington.....	923,539	6,850	930,389
Wyoming.....	14,711,778	544,752	15,256,530
Total.....	127,265,885	49,835,666	177,101,551
Territory of Alaska.....	.....	346,201,925	*346,201,925
Grand total.....	*127,265,885	396,037,591	*523,303,476

* This total does not include areas remaining undisposed of in the States of Alabama, Kansas, Louisiana, Michigan, Mississippi, Oklahoma, and Wisconsin, or the area of the vacant and unreserved surveyed public lands in Alaska, which figures are not available.

Scope of Land Office Work.—The General Land Office has been unable to bring all work current because of the many special duties imposed. Field investigation incident to the construction of Hoover Dam and the oil shale investigations conducted in the States of Colorado, Utah, and Wyoming severely taxed the field forces and materially interfered with the regular routine. Preparation of data in connection with suits pending in the Court of Claims, brought by various Indian tribes, drew heavily and will continue to be a burden for some time.

Legislation.—Memorandum or proposed reports were prepared on a total of 77 bills, public and private,

affecting the public lands, pending before the committees of Congress. Seventy-two bills affecting activities of the General Land Office became laws, and instructions and regulations necessary to carry the laws into effect were issued in 66 cases.

RECEIPTS AND EXPENDITURES

Cash Receipts.—The total cash receipts from sales, leases, and other disposition of public lands (including receipts from copies of records, sales of Government property, etc.), were \$4,621,338.53 and from sales of Indian lands \$214,423.32, an aggregate of \$4,835,761.85, the source of which and disposition in the Treasury are shown in the table, page 230.

VIII. PUBLIC RESOURCES AND UTILITIES

Source of Receipt	Disposition in the Treasury			
	General Fund	Reclamation Fund	State Fund	Total
Sales of public lands.....	\$ 45,683.22	\$ 211,910.62	\$ 13,323.15	\$ 270,916.99
Fees and commissions.....	75,442.77	320,881.10		396,323.87
Bonuses, rentals, and royalties from mineral leases.....	392,396.66	1,854,851.80	1,317,480.63	3,564,729.14
Sales of land and timber in Oregon and California railroad grant.....			273,969.14	273,969.14
Proceeds of land and timber in Coos Bay wagon-road grant...	18,279.62		6,079.40	24,359.02
Sale of reclamation town sites and camp sites.....		8,961.61		8,961.61
Sale timber in Alaska.....	7,992.47			7,992.47
Royalties in coal leases in Alaska.....	7,652.37			7,652.37
Royalties on fur farms in Alaska.....	1,379.00			1,379.00
Royalties and rentals from potash deposits.....	14,521.11			14,521.11
Power permits.....	15,095.13			15,095.13
Fees for copies of records.....	22,287.00			22,287.00
Miscellaneous (surveying fees, forfeiture of contractors' bonds, sale of town lots in Alaska, trespass money, etc.)..	13,151.68			13,151.68
Total.....	\$613,881.03	\$2,396,605.13	\$1,610,852.37	\$4,621,338.53
Sales and leases of Indian lands.....				214,423.32
Aggregate.....				\$4,835,761.85

Expenditures.—The total expenditures for the conduct of the business of the General Land Office and its field activities, including the expenses of the district land offices, amounted to \$2,158,159.81.

LAND ENTERED AND PATENTED

The total area of public and Indian lands embraced in original entries allowed during the year was 5,218,627 acres, not including 91,470 acres embraced in public sales, timber and stone entries, mineral entries, and other miscellaneous items. Of the total area embraced in allowed original entries, 4,201,766 acres were allowed under the stock-raising homestead act of 1916. Of the total area of 1,938,864 acres patented, 1,423,024 acres were patented under the homestead laws.

FIELD SERVICE

The field examiners investigated and reported upon 19,998 cases, of which 12,744 were adverse to the claimants and 7,254 were favorable. There was a satisfactory reduction in

the number of routine cases. Due to the activity of the field investigators, 123,431 acres were restored to the public domain, representing fraudulent entries, etc., canceled on proceedings based on their reports, and 3,048 acres through action of the courts. Indictments were secured in 11 cases. Of the criminal cases tried 13 resulted in convictions and prison sentences were imposed in 2 cases. The allotment of \$60,000 for the prevention and suppression of fires on public lands was expended. July 1 to Sept. 30, 1930, the most hazardous fire period, there were employed 97 forest patrols and lookouts. During May and June, 1931, 55 patrols and lookouts were employed.

CADASTRAL ENGINEERING SERVICE

Work on the survey of the public lands was conducted in 21 states and in Alaska. That part of the work measurable on a quantity basis aggregated 19,391 linear miles. In addition, miscellaneous surveys, including work for and in cooperation with

PUBLIC LAND

Other Federal agencies, were executed in every part of the public domain. During the year approximately 2,450,000 acres of agricultural lands were surveyed and resurveyed in the various western states, principally in Arizona, Nevada, New Mexico, and Utah. Cooperative surveys were executed for the Forest Service to the extent of 780,000 acres, National Park Service, the Geological Survey, Coast and Geodetic Survey, Bureau of Reclamation, and various Indian reservations. There were accepted and placed on file plats representing 1,498,888 acres of original surveys of public lands, and in addition 816,795 acres of lands resurveyed, an aggregate area of 2,315,683 acres.

MAPS

Copper plates for the map of the United States have been revised for printing the 1931 edition. Maps of Wisconsin and Wyoming are in the hands of the contractor for printing. Work is progressing on the map of Idaho and preliminary work has been undertaken on compilation of new maps of Arizona and Oregon. For the information of the committee on the conservation and administration of the public domain, twelve maps of public land states were prepared showing the unappropriated and unreserved lands within those states to and including Dec. 19, 1930.

PUBLIC LAND ENTRIES AND LEASES

Homestead Entries.—There were approved for patenting 6,199 homestead entries. Final stock-raising homestead entries to the number of 2,462, involving 1,051,593 acres, were patented. Since the passage of the stock-raising homestead act of Dec. 29, 1916, 60,071 patents have been issued thereunder, covering an aggregate of 22,341,254 acres. All minerals are reserved to the United States in stock-raising homestead entries.

Mineral Entries and Locations.

—During the year 222 entries under the mining laws were patented and 697 mineral entries were received for action. Oil shale placer locations to the number of 1,181 embracing

approximately 140,539 acres were declared null and void. The enactment of legislation for the Hoover Dam project made necessary the examination and adjudication of mineral locations within areas selected for purposes of that project. During the year 1,597 field reports were received, and since January 1931, 196 contests in connection with this project were filed. The Field Service reports that there are approximately 1,000 locations for examination in the field which will require office action after reports have been received.

Oil and Gas.—Under the relief provisions of the mineral leasing act 95 leases were granted. Under section 14 of the act 90 leases were issued to permittees who showed discovery of oil or gas as the result of prospecting under a permit. Five leases were issued under section 17 through public sale on which bonuses aggregating over \$200,000 were paid. During 1931, 1,655 prospecting permits were canceled.

Preference of Ex-Service Men.

—There were opened to entry through release from segregation or withdrawal 3,698,798 acres, and through survey or resurvey 829,373 acres, with preference right of entry to ex-service men of the World War.

Miscellaneous.—Ninety-three coal prospecting permits, 34 coal leases, 33 coal licenses, 58 potash permits, 1 potash lease, 11 sodium permits, 1 sodium lease, 3 aviation leases, 14 fur farming leases in Alaska, and 5 leases of Alaska lands for stock-grazing purposes were issued.

RECEIPTS UNDER THE MINERAL LEASING ACT

Receipts from bonuses, royalties and rentals under the law providing for the leasing of mineral rights on the public domain aggregated \$3,531,655.05. The largest receipts were obtained from leasing mineral lands in Wyoming, the amount being \$2,184,422.88, and in California with \$870,453.58. Smaller amounts were received from lands in New Mexico, Montana, Utah, Colorado, North Dakota, Alabama, Idaho, Washington, Louisiana, South Dakota, Arizona

VIII. PUBLIC RESOURCES AND UTILITIES

and Nevada, in the order named. Under the terms of the law each state receives 37½ per cent of the receipts from bonuses, rentals and royalties derived from the public lands within its borders, the reclamation fund receives 52½ per cent, and the other 10 per cent is paid into the United States Treasury and credited to miscellaneous receipts.

PUBLIC LAND WITHDRAWALS

Recreational Areas.—Eleven withdrawals were made for recreational classification, aggregating 4,022 acres, based on 4 county and 7 state petitions. There were sold under the recreational law 3,102 acres to the State of Oregon, 1,149 acres to the State of Colorado, and 80 acres to the town of Encampment, Wyoming. The areas leased for recreational purposes are as follows: 280 acres to the State of Oregon; 560 acres to Harney County, Oregon; 171 acres to Dona Ana County, New Mexico; and 11,258 acres to Pima County, Arizona. A total of 4,576 acres were classified as nonrecreational and released from withdrawal.

Grazing Lands.—For stock drive-ways, to expedite the movement of stock between grazing areas and to shipping points, 25,392 acres were withdrawn. The total area included

in such withdrawals at the close of the year was 9,458,390 acres.

RECLAMATION AND IRRIGATION

One hundred and thirty-three railroad right of way applications, and 696 irrigation and miscellaneous applications were received, in practically all of which some action was taken. Action was taken on 323 original homestead entries involving lands in Federal reclamation projects; 308 assignments were considered; 204 desert land entries and 292 final reclamation homestead entries were approved for patenting. Since the passage of the acts of August 11, 1916, and May 15, 1922, applications by 73 state irrigation districts for approval have been received. During that period applications by 58 districts, embracing a gross area of 2,432,258 acres, have been approved, and applications by 16 districts, involving 323,408 acres, have been finally rejected. Seven hundred and thirty-seven cases under the desert land laws were approved, and 543 canceled. There was also considerable activity under the Carey Act, providing for reclamation of arid lands under state supervision, the Pittman Act, to encourage the development of underground waters in Nevada, and the swamp land grant to the several states entitled thereto.

PUBLIC SERVICE COMMISSIONS

By JOHN BAUER

DIRECTOR, THE AMERICAN PUBLIC UTILITIES BUREAU

RESPONSIBILITY TO THE PUBLIC

Legislation and Investigation.

—The question whether the public service commissions, or similar bodies, of the various states have met their responsibility to the public effectively, has received further official attention during the past year. Special legislation has been enacted in a number of states to make the work of the commissions more satisfactory from a public standpoint, and special investigations of the methods and ade-

quacy of regulation were made in several other states.

New York Commission.—The report of the New York Legislative Commission on the Revision of the Public Service Commission Law in 1930, set out the defects and gaps of the present system of regulation in the State of New York and generally throughout the country. The report recognized the general function of the commission as representative of the public, to assure, on the one hand, that the consumers

PUBLIC SERVICE COMMISSIONS

are properly protected in adequate service and reasonable rates, and, on the other hand, that the rights of the investors are maintained so as to assure not only fair treatment of existing investors, but to make possible a continuous flow of capital for the expansion of the utility services to meet the growing needs of industry and community life.

Defects of Regulation System.

—The principal shortcomings of the existing system were brought out as consisting of the inadequacy of yardstick for systematic rate control, the indefiniteness and variability of "fair value" on which a company is entitled to a return, the administrative difficulties of rate adjustments, the consequent insecurity of investors, ascendancy of the judicial rôle of the commissions over the original intent of making them champions of the public, uncontrolled holding company relations and interstate utility transactions, interference by Federal courts, and the need of more adequate personnel for proper administration.

Public Discussion on Revision.

—Following the report, a revision of the regulatory system was presented to the legislature, but up to date none of the important measures has been enacted into law. But the New York investigation and the revision bills have stimulated public discussion all over the country. During the past year there have been numerous public addresses and articles dealing with the problems of regulation. In the discussion, three distinct groups have emerged: The first includes critics of existing regulation who set out the defects in the system, and indicate the changes necessary to make regulation effective. The object of the criticism is not to destroy, but to save regulation for constructive public purposes. The second group also consists of critics of the present system, who, however, denounce regulation as a hopeless instrumentality for public purposes, and who point to public ownership and operation as the only sensible method of promoting the public interest in the utilities. The third group includes the defenders of the existing

system, who admit that there may be some ground for criticism, but who contend that, on the whole, the system has worked very well, and that no fundamental changes are necessary. This group includes mostly the representatives of the companies, as well as a considerable proportion of the commissioners.

VALUATION AND RATE BASE

Price Factors in Reproduction

Cost.—In the third group, there has been a noticeable weakening in position with regard to the principal point of criticism relating to valuation and rate base. The chief attack upon present regulation has been the indefinite and variable rate base, which is dependent largely upon the reproduction cost of the properties. This basis is impossible of satisfactory administration, and is unsound financially. Until the sharp decline in price levels during the past two years, reproduction cost offered a double advantage to the companies, especially the speculative interests: (1) it practically eliminated any real interference with rates; and (2) it supported a higher level of rates than would otherwise have been attained. But with the sharp decline in prices, the reproduction cost rule has shifted gradually in its bearing on the companies. If this rule is now reasonably, or even moderately applied, it would produce in most instances—especially in the electric properties—a lower valuation than the actual cost of the properties. If prices continue to decline materially, consistent application of the rule would destroy the equities of most of the common stocks of the utilities and may even bring about widespread insolvency and financial disorganization.

Question of Public Interest.—

With the changed conditions, the company representatives have been concerned over the reproduction cost rule, which they have helped to establish in their cases, brought before the courts during periods of rising and high price levels. They are now much more ready to accept prudent investment and a fixed rate base as

VIII. PUBLIC RESOURCES AND UTILITIES

the fundamental basis of rate control. The prospect of thus revising regulation fundamentally is materially improved, but there is, of course, the opposite likelihood of insistence on the part of the consuming public on reproduction cost during declining and low prices for the purpose of getting a lower rate base than prudent investment. If consistently applied, the reproduction cost formula works to the advantage of the speculative interests in utilities during rising and high prices, and to the advantage of the consuming public during falling and low prices. In either case, however, the reproduction cost basis cannot be properly administered, and it is financially unsound, whether the course of prices be upward or downward. The public interest, as a long-run proposition, requires a fixed rate base, representing prudent investment, which can be systematically administered and which is financially sound in either periods of rising or falling prices.

INVESTIGATIONS AND NEW LAWS

Pennsylvania.—During the past year further investigations have been made as to the effectiveness of the present system. In Pennsylvania, following the criticisms of Governor Pinchot, two legislative surveys were made, and both brought out the same fundamental defects in the present system as were set out in New York. Under the leadership of Governor Pinchot, a comprehensive revision of the regulatory statutes was proposed, embodying the creation of a "Fair Rate Board" and the establishment of a rate base through contract, but the bill did not become law.

South Carolina.—The legislature of South Carolina created a special investigating committee to make a broad survey of rates, valuation, the basis of organization, and future policy with regard to the electric power industry. This Committee has made the most thorough survey since the New York Revision Commission, and its report will be available in the early part of 1932.

Wisconsin.—Various modifications of the law were made in different states for the purpose of strengthening the administrative personnel of the commissions, and to place upon them more definitely the responsibility of protecting the public. The most notable legislation occurred in the State of Wisconsin, which, under the leadership of Governor LaFollette, established a comprehensive state policy in dealing with utilities, especially power. The program as adopted, does not differ materially from the New York program as formulated by Governor Roosevelt. In general outline, it is a three-part policy: First, it has distinctly strengthened the state commission and system of regulation, including the provision of allowing the appointment of a member to the commission from outside the state. Following this provision, David E. Lilienthal, of Chicago, was appointed. He is a lawyer of high standing in the field of public utilities, and has taken an active part in speeding up and making more practical the processes of rate cases. The second part of the program includes permission to municipalities to institute their own utility systems, including particularly the creation of utility districts in a territory advantageously served through such district organization. The third part is the authorization made for the development of a state hydroelectric and power system.

ELECTRIC RATE REVISIONS

There has been growing public pressure against high rates, especially electric rates for domestic consumers; and there has been a corresponding tendency of greater rate activity by the commissions and downward revision of rates. In some instances domestic rates have been substantially reduced, and there has been a noticeable advance in the establishment of rate schedules which have the distinct object of promoting or stimulating the various kinds of domestic use. At the present time the average domestic consumption of electricity for all uses amounts to

MUNICIPAL OWNERSHIP OF UTILITIES

only about 40 kilowatt hours per month. This small quantity covers on the average only lighting and minor electric appliances. Through available rate schedules, granting sharp reductions beyond 40 kilowatt hours a month, the average consumption can be greatly increased by making attainable a wide range of uses, including electric cooking and water heating. The commissions

have assisted materially in a number of instances, in bringing about the more modern types of rate schedules, and reducing the great variation in schedules. They are moving distinctly to greater uniformity of rates and the elimination of arbitrary classifications which have come down from the past as an heritage of piecemeal and trial method of rate-making.

MUNICIPAL OWNERSHIP OF UTILITIES

By FREDERICK L. BIRD

ASSISTANT DIRECTOR, MUNICIPAL ADMINISTRATION SERVICE

GENERAL

Light and Power Investigations.

—Developments during 1931 indicated an increasing interest in the municipal ownership of public utilities, especially in the field of light and power in which the continuing investigations by the Federal Trade Commission have aroused a considerable degree of public sentiment against the financial policies of some of the companies. Thus far this revival of interest has confined itself largely to agitation in a number of state legislatures for legislation to facilitate the ownership and operation of utilities by municipalities, to the injection of the issue in several notable municipal election campaigns and to the stimulation of a considerable amount of careful research as to the merits of this controversial municipal function.

Ownership Developments.—No significant developments in actual ownership have occurred during the year such as would indicate any immediate change in general municipal policy. There has, however, been a marked decline in the number of village lighting plants passing into private hands; several of the smaller municipalities have undertaken the acquisition and operation of light and water utilities, and the first county-owned hydroelectric power system in the United States began operation in Crisp County, Georgia.

LEGISLATIVE ACTIVITY

Removal of legal handicaps to successful acquisition and operation of utilities by municipalities was the object of proposed legislation in a considerable number of legislative sessions. These handicaps involve, in the main, limitations on borrowing power, limitations on territorial jurisdiction and limitations of the right to acquire utility property.

Oregon and Wisconsin.—The legislatures of Oregon and Wisconsin took the most significant action in facilitating municipal ownership. In Wisconsin the legislature adopted for the second time, as required by the state constitution, a constitutional amendment excluding bonds issued for the financing of utilities from the five per cent debt limitation on municipalities. The amendment will be submitted to a referendum in 1932. The legislature also passed for the first time an amendment to permit the state to enter the power business and enacted a measure authorizing the creation of public power districts.

Pennsylvania.—While the Pennsylvania Assembly failed to take action on a general enabling act passed by the senate permitting the acquisition, ownership and operation of utilities by all but first and second class cities, the legislature did act favorably on a bill authorizing the formation of municipal water districts. The demand for this legislation arose

VIII. PUBLIC RESOURCES AND UTILITIES

primarily from the desire of some thirty municipalities in the region of Wilkes-Barre to organize such a district jointly as a means of escaping a heavy increase in water rates resulting from the acquisition by a holding company of a number of the water works systems in the region.

Massachusetts.—The legislature in Massachusetts facilitated the acquisition of utilities by municipalities by modifying the previous requirement regarding the obligatory purchase of existing private plants.

LOCAL DEVELOPMENTS IN LIGHT AND POWER

Cleveland.—That municipal ownership of light and power is still a controversial issue even in those cities which have owned plants for many years is illustrated by the developments of the year in several important centers of municipal operation. In Cleveland, where a municipal plant provides some fifteen per cent of the local electrical service and is regarded as a rate "regulator" for the private plant, the issue as to the desirability of extension, to keep pace with the growth of the private plant, culminated in a vote at the fall election on a \$2,500,000 bond issue to finance an increase in generating capacity. After a campaign in which, it was claimed, the opposition was financed by the privately owned utilities, the proposal, although it received a majority vote, failed to receive the 60 per cent necessary for adoption, well illustrating one of the most formidable legal handicaps to successful municipal ownership.

Jamestown.—In Jamestown, New York, which operates one of the most successful municipal plants in the East, there was a quite different development. Following years of rate-cutting competition between the public plant and its private competitor, the latter, after a futile attempt to secure an increase in the rates of the municipal plant by appeal to the Public Service Commission and the courts, agreed to withdraw from the field. The city was able not only to finance the acquisition of the private

system from plant surplus and pledge of future earnings, without resort to a bond issue, but also to reduce the base lighting rate from 4 cents to 3½ cents per kilowatt hour.

Los Angeles.—A municipal election in Los Angeles featured the perennial local issue of loyalty to the municipal lighting plant. Lukewarmness or hostility towards the enterprise by a majority of the incumbent elective officials led to the election of a councilmanic majority pledged to the support of the plant. It is claimed that certain unfriendly and inept policies of the mayor with regard to the light and power plant have led to a decline in the efficiency of its administration, but net profits of \$4,200,000 for 1930, nevertheless, were certified this year by the auditors. A recall campaign to remove Mayor Porter, based on this and other charges of inefficiency, was in progress at the close of the year.

Seattle.—The Seattle municipal lighting plant was likewise the subject of political controversy. When Plant Superintendent J. D. Ross after more than 20 years of service was summarily dismissed by a mayor said to be friendly to the private power interests, the mayor himself was speedily removed from office in a special recall election and Superintendent Ross reinstated.

Operating Revenues.—The increasing revenue and budget problems of cities during the year focussed some attention on the possible revenues to be derived from the operation of municipal utilities. The extent to which municipalities secure operating revenue through light and water rates has not been fully ascertained but at least 30 small cities are known as being "tax free" by this method and in the notable case of Jacksonville, Florida, the amount transferred from current lighting plant profits for 1931 was \$1,275,000, equivalent to a reduction of 13.5 mills in the tax rate.

WATER SUPPLY

Southern California.—The most extensive development in the field of

water supply concerns itself with the recently formed Metropolitan Water District of Southern California. With a shortage of water supply threatening to limit population growth and curtail agricultural development within a few years, Los Angeles and a group of neighboring cities have organized, under a special act of the state legislature, to secure water from the Colorado River. To finance the construction of a 300-mile aqueduct, a more expensive undertaking than the building of the Boulder Canyon Dam, a bond issue of \$220,000,000 was voted this year.

New York.—Of important bearing on the future of New York City's water supply was the decision of the Supreme Court in the suit brought by the State of New Jersey against the State and City of New York. By this decision New York will be permitted to divert up to 440,000,000 gallons of water per day from the tributaries of the Delaware River.

Boston.—Water problems comparable to those confronting the city of New York concern the metropolitan area of Boston where it is estimated that the existing water supply will soon be insufficient to take care of the growing population. A somewhat similar decision of the Supreme Court in the case of Connecticut *vs.* Massachusetts will permit a diversion on the Connecticut River of about 191,000,000 gallons per day.

PUBLICATIONS

Research.—Publication during the year of the results of several research undertakings in the field of municipal ownership rendered available valuable information on a subject, the impartial, scientific study of which has been somewhat neglected. A posthumous work of the late Delos F. Wilcox, *The Administration of Municipally Owned Utilities*, gave to administrators of municipal utility enterprises the benefit of his rich background of experience.

St. Lawrence Power Development.—The report of the St. Lawrence Power Development Commission appointed by Governor Franklin D. Roosevelt to investigate and report on public development of the power resources of the St. Lawrence River, contains an analysis of the cost of operations of 49 municipally owned plants in New York which shows that all but five, these being unimportant small village plants, were operating at a profit. For the group the average cost of operation per kilowatt hour sold, including capital charges whether actually incurred or not, was 3.28 cents, while the average revenue was 4.43 cents per kilowatt hour, leaving a surplus of 1.15 cents for improvements, amortization or other uses. Rates were also shown for public and private plants in various parts of the state. The lowest lighting rate, four cents, was in Jamestown, where the private company and the municipal plant were in competition.

Massachusetts.—A comprehensive analysis comparing public and private light and power operations in Massachusetts which appeared as one of the public ownership studies of the Institute for Research in Land and Public Utility Economics, reaches interesting conclusions regarding the situation in that state. Among the more important of these are that while the distribution costs of private companies are somewhat less than those of municipal plants, the commercial and general expense is very much higher for the private companies, due principally to the higher cost of management; that the average domestic consumer of a municipal plant is paying appreciably less for electricity than a similar customer of a private company, but that more of the private companies have rate forms which encourage a freer use of electricity; and that the more efficient of the municipal plants with their lower rates are a most effective aid to regulation.

PUBLIC OWNERSHIP OF WATER POWER

BY JOHN BAUER

DIRECTOR, THE AMERICAN PUBLIC UTILITIES BUREAU

ST. LAWRENCE POWER PROJECT

New York Power Authority.—Public ownership of water power took measurable steps forward during 1931. The advance has consisted less in actual extension and development of public ownership than in legislative provisions and in clarification of public discussion. The most marked forward movement is the creation and organization of the New York Power Authority, provided for by state legislation in 1931. It constitutes a special arm of the State, charged with the responsibility of developing the hydroelectric project on the St. Lawrence River. The Authority consists of five members, appointed by Governor Franklin D. Roosevelt, consisting of Frank P. Walsh, chairman; Morris L. Cooke, James C. Bonbright, Delos M. Cosgrove, and Fred Freestone.

State Policy.—Under the New York statute, a definite state policy has been established for the financing, construction and operation of the St. Lawrence power plant. The project involves Canada and the United States. It requires, first of all, an international agreement between the Federal and Dominion Governments, including navigation as well as power; second, a special contract for the joint power undertaking between the Province of Ontario and the State of New York; and, third, agreements for the division of costs between the state and Federal Governments. The total power development will come to about 2,200,000 horsepower, of which 1,300,000 is primary, and will have an aggregate output of about 16,000,000,000 kilowatt hours a year, of which 10,000,000,000 is primary. Half of these totals come under the domain of the New York Power Authority, unless by special agreement New York should acquire more than 50 per cent of the total output.

Construction and Operation.—

The construction and operation of the power plant will be in charge of the Power Authority. Beyond generation, however, the Authority will endeavor to enter into a contract with the private utilities for the transmission and distribution of power on a basis which will assure the people of the state the benefits of low cost power. If, however, suitable contracts for the protection of the consumers cannot be attained, the Power Authority will determine alternative methods, and will report to the legislature its recommendations. The policy of the state is to obtain for the public, especially householders, the lowest rates that can be established.

MUSCLE SHOALS

Norris Bill.—Another attempt at water power legislation was made by the Congress of the United States. It passed the so-called Norris bill, which provided for the public construction and operation of Muscle Shoals plant, including the Cove Creek development. The plan provided also for flood control, the improvement of navigation, the experimentation and manufacture of fertilizers, and other purposes. Under the bill there would have been organized a special government corporation which would own and operate the properties. While, in general, the corporation was expected to sell power wholesale to the private companies for transmission and distribution, it was empowered to build transmission lines, if suitable contracts for the ultimate delivery of power to consumers could not be negotiated with private companies.

President's Veto.—The Norris bill had the support of many public groups, and had been in various forms before Congress for several years. It was vetoed, however, by President Hoover, on the ground that it would involve the government unduly in

private business, and that the project could not be economically justified on the basis of steam power available to the private utilities serving the districts which would be supplied by Muscle Shoals. The cost studies on which President Hoover relied, are subject to two-fold criticism: (1) A large proportion of the costs that were allocated to the power development should properly have been charged to navigation and flood control, and (2) probably a much larger aggregate of power would be available for sale than used in his calculation. On the basis of his figures, the conclusion seems warranted that the power development would not be economically justified. A special commission, appointed by the President, has recommended further development of Muscle Shoals by the Federal Government, the plant to be leased, however, for 50 years to private operators. In the meanwhile, plans are in progress for joint development on the part of nearby states, but the Norris bill for Federal ownership and operation will doubtless be introduced to Congress again in the 1931-1932 session.

BOULDER DAM

Construction and Financing.—The one large project in which public ownership has made physical advances, appears at Boulder Dam, where actual construction has been started, and where definite contracts have been entered into between the Federal Government and various public groups, to make the Federal capital outlay financially self-sustaining. In the final system, there will be a wide ramification of public ownership. The power to be generated has been allocated as follows:

Metropolitan Water District of Southern California for water pumping....	%
State of Nevada.....	36
State of Arizona.....	18
City of Los Angeles.....	18
Smaller municipalities.....	13
Privately-owned companies.....	6
	9
	100%

Operation.—As this statement indicates, the final development will involve the States of Nevada and

Arizona, the City of Los Angeles, the metropolitan water district, and the various small municipalities in a combination of Federal, state and municipally owned and operated properties. It will make available a total of 4,000,000,000 kilowatt hours of continuous power, but the project involves also irrigation, flood control, water supply, and navigation. The various phases of the plan include the most comprehensive aggregation of publicly-owned and operated properties definitely provided for in the United States.

STATE HYDROELECTRIC DEVELOPMENTS

Wisconsin also has enacted legislation which provides for a future state-owned water power system. There is consideration for the establishment of definite, state-owned and operated power units, which would be charged with the responsibility of developing the hydroelectric power within the state and providing for transmission and distribution in the interest of the state at large.

State Control of Power Resources.—In the discussion of water power, there has emerged the rather distinct conception that, for the future, the development of hydroelectric resources should become the special responsibility of the state, through an instrumentality similar to the New York Power Authority. The point of view has advanced markedly that no such public resources which involve the welfare of the state at large, and which in most instances include also matters of flood control, irrigation, reforestation and other purposes, should hereafter be entrusted to private development and operation. As this principle becomes accepted, it readily leads to the extension that all the power resources of the state ought to be included in the state unit, so that systematic development and the most economical operation may be attainable, without the duplication that inevitably exists when two or more private systems control the power resources of the state under the general system of state utility regulation. How far such a state policy may be

VIII. PUBLIC RESOURCES AND UTILITIES

extended in the future is, of course, conjectural. The private companies may readily continue and, by contract or otherwise, transmit and distribute power generated by the state agencies. That there would be economy in greater coordination of comprehensive state power systems, there can be no doubt. But the difficulties of replacing the private interests by public organization, are so great, that, for the most part, the better alternative might be to effect further consolidation of private companies, and for the state to deal with the private agencies for the working out of a joint program between the public and private systems.

MUNICIPAL HYDROELECTRIC DEVELOPMENTS

Los Angeles and San Francisco.

—Outside of the Federal Government and the state, there are important municipal hydroelectric developments. Reference has already been made to the City of Los Angeles and smaller municipalities in Southern California which form a part of the Boulder Dam ramification. The City of Los Angeles, however, has already developed water power in connection with its water-works system, and also owns and operates transmission and distribution lines as a part of the municipal system. Likewise, the City of San Francisco has large water power possibilities in connection with the aqueducts of the city water system. The electricity generated, however, will be sold to the private companies for actual distribution in San Francisco or adjacent territory.

Seattle.—The largest municipal hydroelectric system appears in Seattle, which already has a development of 130,000 h.p. It has undertaken the development of the Skagit River project, which in its final completion involves three successive dams and power houses, with an aggregate of 1,120,000 h.p. When this development is completed, the City of Seattle will have sufficient power supplies for many years to come. It owns also transmission lines, distributing system, and furnishes service to all classes of customers. Its schedule of

domestic rates is lower and more distinctly promotional of use than prevails in any city of similar size in the country.

Pacific Coast Resources.—The resources which lend themselves to public ownership either in Federal state or municipal form, appear especially in the Pacific Coast States. In this wide area, probably the most economical course would be for the creation of a Federal corporation for the development of all the Pacific Coast projects, with a ramification of transmission lines to carry the power to the population and production centers.

PUBLIC OWNERSHIP IN ONTARIO

The general pattern for public ownership systems appears in Ontario, Canada. Here the Province itself, through a special commission, owns and operates practically all the generating and transmission properties. The power is sold at cost to the municipalities, which in turn own all the local distribution properties and which furnish current to the public at cost, under general supervision of the provincial commission. The costs as determined, include throughout not only operating expenses, but also maintenance, depreciation, interest, and amortization of investment. To a large extent, the properties have been built either directly out of earnings, or indirectly through the process of amortization. As a large economic area, the consumers of Ontario doubtless obtain electricity at much lower rates than prevail in any similarly large district in the United States. The basis of this system is hydroelectric power, but it includes also steam power as supplementary.

The Ontario system has served as a pattern of the public ownership proponents in the United States. Whether an analogous system can be built up anywhere in the United States with equally favorable results, is, perhaps, doubtful. The Ontario system goes back many years, and has been expanded with the development of the industry. But in the United States, the private companies are deeply entrenched both in genera-

WATER SUPPLY

tion, transmission and distribution properties. To dislodge them through a coordinated state and municipal system under public ownership, would be a difficult task. While doubtless there will be advancement in public

ownership systems, for the most part the developments will probably come through the private companies under more systematic regulation in the public interest than prevails generally at the present time.

WATER SUPPLY

By H. BURDETT CLEVELAND

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MANAGEMENT AND CONTROL

Metropolitan Districts.—Increased attention is being given to the formation of joint water supply districts, the economic and other benefits arising from such concerted action having been emphasized by the occurrence, or the threat, of water supply shortage in many districts as a result of the drought of 1930.

Holding Companies.—The grouping of public water supply systems, privately owned in most cases under single holding company ownership and management, has had a decided set-back for the past two years. This situation has arisen largely from the stringent financial market but may be said to be due also to a reflex from over-optimism as to possible returns, which have been curtailed by heavy fixed charges, in some instances, as a result of the high purchase price of some of the systems taken over.

Reforestation.—Reforestation of water sheds furnishing public water supplies continued to show progress in 1931, especially in the northeastern states. Added impetus to this movement should result from the extensive general reforestation program adopted by New York State in the November election.

United States Supreme Court Decisions.—On Feb. 24, 1931, the United States Supreme Court handed down its decision in the suit brought by Connecticut against Massachusetts to prevent the proposed diversion of water from the Swift and Ware Rivers, tributary through the Chicopee River to the Connecticut River, which is being carried out by the

Metropolitan District (Boston) Water Supply Commission. Connecticut's bill of complaint was dismissed (the Court upholding the Special Master's finding of fact and law) without prejudice to Connecticut's right to maintain a suit against Massachusetts whenever it shall appear that substantial interests of Connecticut are being injured through a material increase of the amount of water being diverted above the amount allowed by permits from the War Department. Following the decision in the Connecticut-Massachusetts case, the United States Supreme Court adopted the recommendations of the Special Master appointed by the court to make findings of fact and conclusions of law and to propose a decree, and allowed the diversion by New York City of 440 m.g.d. of water from tributaries of the Delaware River. Suit against such diversion was brought by New Jersey in 1929, the State of Pennsylvania intervening, later.

Drought Conditions.—Rainfall during the early spring relieved the effect on water supplies of the drought of 1930, which did not recur in 1931 except in limited areas.

CONSTRUCTION

Volume.—While there were many large water supply projects under construction in 1931 and considerable activity in expansion of sources as a result of rainfall deficiency during the previous year, the total volume of construction fell off considerably. Many municipalities with urgent water supply needs to meet are losing the benefit of conditions which may

VIII. PUBLIC RESOURCES AND UTILITIES

not again obtain for years by deferring needed improvements at a time when construction materials are 25 to 30 per cent lower in cost than in 1929.

New Projects.—One of the largest single bond issues in the history of water-works construction was voted on favorably Sept. 29 when the project of the Metropolitan Water District of Southern California was carried, involving an expenditure of \$220,000,000. An aqueduct 252 miles long will convey water from the Colorado River to Los Angeles, Pasadena, Glendale, Long Beach, and ten other cities. Toledo, Ohio is planning a new system with Lake Erie as the source.

Projects Under Construction.—Work is progressing on the second pressure tunnel under New York City, on the Cobble Mountain (Springfield, Mass.) development; the Swift and Ware Rivers project (Boston, the Hetch Hetchy (San Francisco) project and several other large developments.

WATER SUPPLY TREATMENT

Water Works Practice.—The Committee on Water Works Practice of the American Water Works Association has published a report of the highly varied types of study which have been conducted under its direction by many agencies.

Processes.—No new processes have been developed during the past year as disclosed by reports of experiments, but intensive study and plant-scale application is being given to the ammonia-chlorine, or chloramine, process for taste removal and

to the application of activated carbon for taste and odor removal. Continued tests and wider application of chloramine treatment has been notable during the year, at St. Cloud, Minn., Cleveland, Ottawa, Denver, and at many other cities. This process which has been described in great detail by Enslow (*Water Works and Sewerage*, Mar., 1931) covering the chemical reactions, efficiency of the process and methods of application of the reagent, is claiming considerable attention from filter plant operators by reason of its effectiveness in preventing chloro-byproduct tastes. The application of powdered activated carbon before filtration is proving, in nearly all instances reported, an effective and economical process for the removal of tastes and odors from public water supplies, following studies of the use of carbon in 1928 at Chicago, at Cleveland, at Chester, Pa., and at other cities and more especially following its use in powdered form at Hackensack, N. J. The process was adopted at some 30 or more plants during the year, its use having been advised, as in the case of recommendations made by the Ohio River Board of Engineers, to overcome, more especially, the ill effects of drought conditions on the esthetic qualities of potable water. The process of superchlorination of water and dechlorination by sulfur dioxide to remove excess chlorine has continued in favor at many filter plants. In filter plant design, concerted study is being given to the most favorable effective or typical size of sand particle in filter beds and to the possibility of increasing wash water rates.

STREET AND HIGHWAY TRAFFIC REGULATION

BY ERNEST P. GOODRICH

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TRAFFIC SAFETY

Motor Casualties.—During 1931, street and highway traffic increased in volume, but probably not at the rate of previous years. Automobiles

killed 34,000 persons in the United States in the year, a little less than the total United States soldiers killed in the World War, a United Press survey reveals. The A. E. F. official

casualty figures list 37,541 as "killed in action." Motor vehicle deaths and accidents increased faster than either motor vehicle registration or population.

Safety Measures.—Much thought and effort was given to the subject of safety, both that of riders and of pedestrians, and many results of interest and moment were found. A study of before and after accident records in Cleveland demonstrated that adequate street lighting reduces traffic accidents during the dark hours. A year and a half study by the National Safety Council on 354 signaled intersections showed no accident reduction in 38% of these intersections but the accident reduction when averaged over all the intersections was 20.5%. Traffic counts prior to installation of signals were available for less than 20% of the total number of intersections. Traffic signals have a more beneficial effect at simple intersections than at complicated ones. This report and the recommendations arising from it were published by the National Safety Council in six issues of *Public Safety*. To further traffic safety, 21,250 billboards and signs were removed from the highways of Maryland. The remaining 700 signs were licensed. All moneys from such permits and licenses are to be used for road beautification.

TRAFFIC ENGINEERING

American Society of Municipal Engineers Report.—Reports by traffic engineers and traffic surveys and studies in many municipalities and states have added a considerable amount to the literature of the science and art of traffic engineering. A few of the more important ones may well be mentioned to show the ever-widening interest and knowledge of this subject. A report by the American Society of Municipal Engineers indicated, among other things, that traffic engineering is not considered necessary in the majority of cities of 100,000 population and over. Most of the cities still use the amber-green cycle, and the majority of traffic officials favor the

progressive system. An interesting tendency was disclosed in that mass transportation is gradually changing from street cars to buses. The report is based on a questionnaire study of cities of 100,000 population and over.

Providence Survey.—To provide "white collar" men with work and to improve traffic conditions, a comprehensive traffic survey was made in Providence, R. I., financed by the Providence Emergency Unemployment Committee. This survey included traffic counts at 140 intersections, 2 cordon counts, all day studies of traffic speeds and obstacles to such speeds, and special studies on parking conditions between 8 a. m. and 9 a. m. This brought up to date the traffic survey made in 1927-28.

Seattle takes an annual traffic survey, at which time the vehicular and street-car flow through the city is counted for 15 hours daily on week days during July and August. Other special counts during the year are taken to round out the monthly variations.

Rochester.—The Rochester Engineering Society completed its fifth annual traffic survey. The survey covered not only the city itself but a portion of the surrounding country.

Washington.—The Division of Highway Transport of the Bureau of Public Roads of the U. S. Department of Agriculture is to make a one-year study of the highways immediately surrounding Washington. The study will cover a complete traffic survey.

University of Wisconsin.—A traffic report by the University of Wisconsin under a fellowship established by the Outdoor Advertising Association and covering a three-year period was issued. The research was on the subject of making short traffic counts, and various formulae and factors were worked out for various kinds of traffic in cities of varying population size.

STREET TRAFFIC AND CODES

Capacity and Speed.—New surveys and studies to determine traffic capacities of streets were made by

Dean Johnson of the University of Maryland and by Mr. Eldridge, Traffic Engineer of the District of Columbia. Dean Johnson's study gives new definitions of "working capacities," of "congestion," and of "incipient stagnation." The "working capacity" is reached when following vehicles find it difficult to pass slower preceding vehicles; "congestion" is reached when the street is filled with vehicles, making it impractical for vehicles to shift from one lane to another, such "congestion" lasting not less than one minute; and "incipient stagnation" is that condition immediately following the attainment of an "ultimate" maximum volume of vehicles. Dean Johnson developed a new formula for traffic capacity and speeds. Mr. Eldridge's work was based on a study of traffic conditions at the Holland Tunnels. The narrowing of the tunnel to two lanes from several lanes in the approaches, and the delay consequent to buying and collecting tickets reduces the total capacity of the Tunnels to that actually found.

Legislation.—In order to facilitate traffic flow throughout entire states and to reduce accident hazards many of the state legislatures passed laws which either compel individual municipalities to adhere to one general traffic code, or placed completely centralized control in the hands of a single state department or bureau. By the end of the 1931 legislative session, 34 states had adopted one or more of the four parts of the Model Traffic Act recommended by the National Conference on Street and Highway Safety, and 14 other states had adopted legislation conforming in some measure to this Model Act. At least 41 cities had adopted the model municipal Traffic Act and 14 others are reported as considering its adoption, in addition to municipalities in New York and Wisconsin whose ordinances are made uniform by state law.

Traffic Control.—In addition to the traffic regulations adopted last year, New Jersey in 1931 adopted a

traffic signal code which obliges all municipalities in the state to install signals only in exact accordance with the provisions of its code. Following the lead of Massachusetts and New Jersey in centralizing traffic control, Pennsylvania joined them. The Secretary of Highways is empowered to regulate traffic control and to remove unnecessary signs and signals throughout the state. A detailed traffic code is part of the law, which while representing good practice now, is not flexible and may in years to come become obsolete. The motor vehicle commissioner is granted power to refuse registration to non-examined used vehicles. These examinations are to be required once in 4 months, with a 3 months follow-up after each inspection. Passing to the right is authorized on any highway within a business or residential district having two or more marked lanes of traffic in one direction. Certain classes of cities are granted power to impound improperly parked cars.

Lighting.—Massachusetts and Ohio had before their legislatures bills permitting state authorities to light highways between cities. The most extraordinary feature of the Ohio bill is that it prohibits public ownership of the lighting equipment and of any plant to furnish the light. It must all belong to and be furnished by a "public utility." The Massachusetts bill limits the authorities to obtain current from electric power companies. Mohawk Valley highways and the inter-city highway near Binghamton, in New York State, were lighted by electric power corporations as demonstrations.

Airmarkers.—The United States Department of Commerce urged all the states to mark the pavements of state highways in letters 10 to 30 feet high for the benefit of passing airplanes. The number of the road, preceded by "U. S." for Federal highways and by the state symbol for state roads is recommended. As a result, a new highway sign is the air-marker now found in the pavements

of Ohio's highways. On concrete, this is of yellow letters surrounded by a black border, and on black pavements it is of yellow letters.

Officers' Uniforms.—To improve visibility of traffic officers, white gauntlets, capes, half sleeves, belt, etc., were used by various cities as a part of the official uniforms.

Traffic Devices.—A study by a joint committee on "Traffic Devices and Their Application" of the American Road Builders Association and the American Association of State Highway Officials found that "there is practically no uniformity in the design, construction or use of traffic devices." This naturally increases the cost and obviates the use of any standard against which municipal officials can compare products offered.

THE PARKING PROBLEM

Vertical Parking.—The parking problem continued to present itself in varying phases during 1931 and efforts were made in all sections to cope with it. Some of the solutions offered were in the form of regulations and others in new construction. One company perfected a parking machine wherein cars are parked vertically in individual cages, operated on endless chains, the whole being operated electrically by the owner of the car and without the need of any attendant. A 24-car garage or machine occupies a space 12 x 24 feet, and a car is delivered in one minute.

Planted strips in the center of Savannah's streets were used for parking of cars and as pedestrian walks. The city raised the curb around the strips to double their height and made them of rough rubble with uneven tops. The planted strips are now respected by both pedestrian and vehicle traffic.

One-side Parking.—A new traffic rule in New York City permitted parking on one side of the cross-town streets and loading and unloading on the other side with no parking permitted. The regulation changes the parking permission from one side to the other of the street, morning and afternoon, and the consequent loading permission.

EXPEDITING TRAFFIC

New Roads and Types.—The increase in volume of traffic necessitated an increasing amount of construction, not only of new highways, but of newly developed types of highways, bridges and subways. These new types are the result of much study on the part of highway and traffic engineers to facilitate traffic flow and decrease and prevent congestion along the line of travel. Psychology comes in for its share of usefulness in preventing traffic tie-ups. For instance, Michigan ceased to use the word "detour" except on very short ones. The "temporary route" has come into use, and it must be of a much higher type than the old unimproved dirt road which came to be associated in the public mind with the word "detour."

Bridge Lanes.—New York inaugurated a new method of keeping cars in their proper lanes on one of its bridges by providing tracks on the roadway surface, within which tracks the cars would remain as long as they were on the bridge. Numerous complaints from citizens that the tires were cut by the rails and that the clearance between lanes was not enough caused the repaving of the roadway in its original condition. With the tracks, three lanes of vehicles could be accommodated, but without the tracks only two lanes can be used, as the driver needs a wider lane when not restricted by the tracks.

Highway Location.—The American Road Builders Association convention gave special attention to highway location and recommended the classification of highways on the basis of volume of traffic, and especially recommended that the "super-highways" or "boulevards" carrying more than 5,000 vehicles a day should have no grade crossings.

By-Passing.—New Jersey's by-pass program showed increasing popular support and freer traffic flow throughout the state. Two by-pass schemes are generally used in the system; one is by vertical by-passing and the other by horizontal by-pass-

VIII. PUBLIC RESOURCES AND UTILITIES

ing. In the first case, the road is elevated either for a whole stretch, of several miles if necessary, or by simple grade separation. In the second case, the road is carried to one side of the town to be by-passed.

WATERWAYS AND HARBORS

BY PRESTON KING SHELDON

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WATER COMMERCE

Expense Item.—While decreases were noted in general in the traffic on the waterways and harbors of the United States in 1931, the practicability of water commerce for a year of depression was being demonstrated in many areas for the purpose of saving expense on finished products. The year was marked by a partial departure from the theory that the chief value of our waterways was for the transportation of raw materials.

New commodities not previously routed to any great degree by water found their way into the holds of vessels this year from Boston, Philadelphia, Camden, Detroit, Chicago, Milwaukee, Duluth, Buffalo and New York City. Among these were canned milk, auto parts and plumbing fixtures. Much of the commerce in this respect was via the Great Lakes and the New York State Barge Canal. One shipment of twenty carloads of plumbing fixtures reached Long Island City from Wisconsin by boat in seven days and six hours.

Financing.—Two outstanding marks of progress in waterway commerce were the introduction of private capital which was invested in a barge express service from Cincinnati to New Orleans on the Mississippi and the opening of the new Welland Canal in Canada to vessels up to 450 feet long. About \$3,500,000 was required to start the first privately owned inland waterways transportation service on the Mississippi River this year. This was a step towards which the Federal Government had been working since it first made available by the Inland Waterways Corporation a comprehensive freight service on the Mississippi more than ten

years ago. The government venture, financed with its own money, was announced as a means of showing what could be done with waterway commerce for the purpose of setting an example to be followed by private capital.

WELLAND CANAL

The first of the big types of ships to pass the Welland Canal was a grain carrier with a cargo of 217,000 bushels of wheat from Duluth. Completion of this canal and the official opening of it is planned for next year. It will become an essential link in improved commerce between the Great Lakes and the Atlantic Ocean. A cargo of 170,000 bushels of mixed grain from Fort William aboard a freighter 382 feet in length was the first of the Upper Lakes grain carriers to transit the Welland Canal in December of 1930.

NEW YORK STATE BARGE CANAL

More than the usual quantity of grain awaited shipment from Buffalo and the Upper Lakes ports at the beginning of navigation this year on the New York State Barge Canal. On only one occasion in history was this route opened earlier than this year. Business began for 1931 on April 6 and 7. The earliest prior date was March 27, 1828. Because of the extended season and the shipping of a greater variety of cargo a slight gain in tonnage was reported for the year although high water in early April retarded shipping. An incomplete audit late in November showed a total of 3,368,808 tons for the season which was 33,351 tons more than in 1930. The tendency for a decrease

in tonnage from shippers using the canal in past years was overcome to a great extent by the desire of other firms to save money in transportation charges.

ST. LAWRENCE RIVER

Several inland waterways which customarily are unnavigable in winter were opened earlier than usual this year. The St. Lawrence River route was cleared of ice by March 19. The earliest prior period was March 29, 1921. The first steamer from the West on the Great Lakes arrived at Buffalo on April 3, which was twelve days earlier than in 1930. The record prior to this was an arrival on March 20, 1919. Two steamers cleared from Duluth with grain early in April and were battling with ice at Soo locks on April 10. Navigation was reported open in at Sault Ste. Marie on that date.

INTERCOASTAL TRAFFIC

Tonnage.—Intercoastal traffic at the beginning of the year as indicated by the tonnage of the calendar year 1930 was keeping abreast of the 1929 figures. More than 72% of this commerce originated in 1930 in 67 ports located in 20 states. The total tonnage for 1930 was 9,043,772 and was carried in American boats. The eastbound traffic was 6,502,267. North Atlantic ports received 91.5% of the tonnage or 5,951,062 tons. Gulf ports received 6.5% or 429,661 tons. The balance went to the South Atlantic coast ports. The westbound commerce was 2,541,505 tons with three-quarters of the shipments originating in the North Atlantic ports. The Gulf ports came next with 22.5% and the balance was shipped from the South Atlantic coast.

Products.—Petroleum and its products led the eastbound shipments in our intercoastal commerce for 1930 with a total of about 3,000,000 tons. Logs and lumber were next with a tonnage of 1,800,000. Shipments of iron and steel were the largest items in westbound cargo with a total of 1,100,000 tons. Westbound shipments of fruits and vegetables exceeded petroleum shipments from the East,

which were only 100,000 tons. Fruits and vegetables were 140,000 tons, while the eastbound shipments of these perishables was 680,000 tons. This commerce of course all passed through the Panama Canal.

PANAMA CANAL

Revenues.—A net revenue of \$15,409,991 was cleared by the Panama Canal in the fiscal year ending June 30, 1931. The financial statement showed a surplus of \$7,060,494 after deduction of fixed charges. The total revenue was \$42,765,048. This was \$4,527,219.96 less than in 1930. These revenues were compiled from combined business and canal operations. The canal revenues are derived mainly from ship tolls. The decreases were about evenly divided between the two sources. The revenues of the canal itself fell from \$27,426,372.71 in 1930 to \$24,990,580.74 in 1931, a decrease of \$2,435,791.97. It is significant that news dispatches in January of this year had predicted a decrease in round figures of \$2,000,000 for the fiscal year. Business receipts in the same period fell off by \$2,091,427.99.

Tonnage and Tolls.—Storms in November were holding up commerce on the Panama Canal. A slight increase in tonnage had been noted in September over the previous monthly records although the record was not as high as for September, 1930. In the six months from April to September, 1931, 2,473 commercial vessels passed through the canal paying tolls of \$11,198,786.05, as against 2,857 in the same period in 1930 with tolls of \$12,814,501.95. A slide on November 9 near the northern entrance to the Gaillard cut stopped traffic entirely until Nov. 13. The October decline in business was the largest in the history of the Panama Canal. A loss of \$3,500,000 for the calendar year was faced on Dec. 1. The index of the decline matched fairly well with that of the general decline of the world's business. The daily average of commercial transits for three full calendar years compares with the average of the first ten months of 1931 as follows:

VIII. PUBLIC RESOURCES AND UTILITIES

1928.....	17.31
1929.....	17.62 (the peak year)
1930.....	16.12
1931.....	13.85 (first ten months)

PORT RECORDS

Comparisons.—Several changes are noteworthy in connection with the position of ports on foreign tonnage. For a second year Baltimore is second. This place was held for years by New Orleans which is now fourth. Los Angeles is third. New York is still first although a loss in money value of \$600,000 for foreign commerce was reported for the fiscal year of 1931. Port Houston, Texas, has gone from fourth position to third in export tonnage and from eighth to sixth in total foreign commerce. This port was formerly twenty-

seventh in imports and is now twenty-first.

Texas Gulf ports are benefitting from a decentralization of shipping that is to be expected from the decentralization of industry. The future is expected to bring some decrease in exportable surpluses of agricultural and natural products but this is not yet noticeable. This will probably be counterbalanced by industrial developments which will tend to increase coastwise traffic.

Imports and Exports.—From a value standpoint imports showed increases at Hampton Roads, Va., while exports decreased in 1931. This includes Norfolk, Newport News and Portsmouth. Tobacco trade with the Far East made a good showing.

ELECTRIC LIGHTING AND POWER

By G. F. WITTIG

STATISTICAL EDITOR, *Electrical World*

SCOPE OF SERVICE

Consumption Analysis.—Electric light and power service at the end of 1931 reached about 24,676,000 consumers, engaged the activities of 285,000 employees, required the operation of power plants having an aggregate rating of 32,922,000 kilowatts and involved a capital investment of some \$12,400,000,000. Of the consumers by far the largest group is, and has been since the early days of electric lighting, the residential users. These number 20,441,000, or 83 per cent of the total. The remainder are retail commercial customers, 3,613,000—and wholesale commercial, 622,000—these last being chiefly long-hour users of electricity for industrial power, that is, manufacturing. Comparison of the number of residential customers and the number of families as revealed by the 1930 census indicates that 70 per cent of our people live in electrically lighted homes. The proportion is necessarily higher for the urban than the rural population; the number of farms served is probably between 700,000 and 750,-

000; this leads to the conclusion that 85 per cent of the urban population have domestic electric service.

Power Sources.—Turning next to the sources of power, 23,890,000 kw. is driven by steam, 8,610,000 kw. by water power and 425,000 kw. by internal combustion engines. It will be seen that steam power greatly predominates. Although there is still much undeveloped water power in the country it is in the main remote from the masses of population; the high cost of hydro-electric developments, the excessive investment in transmission lines necessary to bring the energy to the points of utilization and the efficiency already attained in the conversion of fuel to electrical energy dictate the preponderant use of steam, for economic reasons, in the more densely populated portions of the country. Moreover, the continued technical progress in the utilization of fuel, the large possibilities for further achievements in that direction against the very limited margin still remaining for improving the efficiency of water-

ELECTRIC LIGHTING AND POWER

power utilization, the need of large investments in reserve steam plants to meet the emergencies of sub-normal stream flow,—these all point strongly to a further relative increase in the importance of steam compared with water-power, despite the fact that the former consumes stored natural resources while the latter does not. The need of abundant steam reserve and the advantages of inter-connecting power systems for the transfer of energy on a large scale were made very evident during the past two years of seriously subnormal stream flow. A further influence working chiefly against water-power development has lately come into prominence in the agitation for curtailing or taxing the interstate transmission of energy, since that transmission is closely related to the use of water-power.

Investment.—Finally, as to the investment, while data are not available for an accurate analysis it may be said that between a third and a fourth, only, of the total is represented by power plants, the remainder by transmission and distribution systems, both overhead and underground, and other facilities involved in the giving of service to the user. As in many other fields of commercial activity distribution, rather than production, involves the larger item.

OPERATION

Comparative statistics on operations in recent years reflect the extent to which electric light and power have been woven into our scheme of existence. The following statistics are taken from the *Electrical World*, those for 1931 being in part estimated because complete information was not yet available and therefore subject to revision. In the light of past experience the changes to be made will probably be small and will not essentially affect the conclusions. Several relatively small items have been omitted from the table, such as sales for municipal lighting and for electric traction. Transmission and distribution losses consume about 14 billion kilowatt-hours annually.

	1931	1930
Energy, millions of kw.-hr.		
Generated.....	86,679	89,952
Domestic use.....	11,868	11,018
Retail commercial.....	13,956	13,944
Wholesale power and light	38,106	41,621
Revenue, millions of dollars		
Total.....	2,137	2,151
Domestic use.....	695	664
Retail commercial.....	569	576
Wholesale power and light	554	591
Averages for domestic sales		
Rate, cents per kw.-hr....	5.87	6.03
Use, kw.-hr. per customer.	580	548
Yearly bill, dollars per customer.....	34.10	33.00

Decline in Industrial Use.—It will be seen that there was a severe reduction in the amount of energy used for industrial purposes. There had been a similar, though smaller, reduction in 1930 compared with 1929. Retail commercial use, largely for store and office lighting, changed but little. The increase in sales for domestic purposes was caused primarily by a larger use of electric appliances, notably electrically operated refrigerators, ranges and water heaters, and only in slight degree by the addition of new customers. This view is supported both by a computation of probable energy use based on reported annual sales of appliances and by the larger average consumption per customer. Despite diminutions in certain regions the aggregate number of consumers increased by 120,000, residential consumers alone by 110,000.

Cost Increase.—Meanwhile the average cost per kilowatt-hour to the residential customer has been steadily declining. It was 6.33 cents in 1929, 6.03 cents in 1930 and 5.87 cents in 1931. These are national averages, from which local averages depart more or less, depending upon conditions, while individual cases are obviously subject to still wider variations.

PHYSICAL EXPANSION

New Construction.—During 1931 physical expansion continued, though at a reduced rate compared with 1929 and 1930. New construction, calling for large outlays of money, was carried on for various reasons, econom-

ically justified or necessary aside from the desire to maintain employment and to keep organizations unimpaired. Projects that had been started before were completed in anticipation of the resumption of normal growth in the demand for power. Though the total energy output in the country as a whole was less than in 1930 this was by no means true of every individual operating company. In localities where the consumption increased, facilities had to be provided accordingly, irrespective of a decrease elsewhere. In particular, the very general increase in the use of electricity for household purposes called for augmenting that portion of the equipment devoted to this branch of the industry.

Capital Expenditures.—The magnitude of these additions is measurable in terms of capital expenditures, that is, expenditures representing an actual increase in the physical property. During 1931 these expenditures, according to a telegraphic survey at the end of the year, were about \$633,000,000. Of this, \$96,000,000 went into the construction of steam plants or additions, \$67,000,000 into hydro-electric plants, \$81,000,000 into transmission and \$348,000,000 into distribution systems, the last being by far the largest item of the four; \$41,000,000 for miscellaneous purposes completes the total. In addition, operating and maintenance costs were \$920,000,000, a slight decrease from the \$942,000,000 of 1930. These expenses do not include such items as taxes (\$200,000,000), interest and amounts set aside for depreciation and amortization.

TECHNICAL PROGRESS

Fuel Factors.—Although the year was marked by no announcement of radical innovations, technical progress continued in directions previously established. The average coal consumption per kilowatt-hour generated from fuel fell to 1.56 lb. from 1.62 in 1930 and 3.2 in 1919, according to the U. S. Geological Survey. The feasibility and economy of mercury

vapor turbine units, in combination with steam, has been so far established that two such units, aggregating 45,000 kw., are stated to be under construction for operating in 1932.

Lighting.—Indoor lighting, especially in public buildings, continues to adapt itself to harmonize with modern architectural design, while sign-lighting with gas-filled glass tubes of the neon type is increasingly in evidence. Lamps rich in ultraviolet radiation, simulating the effect of summer sunlight, are finding favor.

LEGISLATIVE AND LEGAL DEVELOPMENTS

The Federal Trade Commission's investigation was continued by hearings at intervals during the year with respect to holding companies. Against proposals to increase Federal supervision of electric light and power companies by the Federal Power Commission, the Interstate Commerce Commission or otherwise, vigorous objections were raised by state utility commissions as invading states' rights. In a number of state legislatures bills were introduced to prohibit the sale of electric appliances by public utility companies but, except in two states, they did not become laws. In connection with the proposed development of water power on the international portion of the St. Lawrence River, steps were taken toward the settling of conflicting claims of jurisdiction between the National Government and New York State.

EDISON MEMORIAL

The death of Thomas A. Edison on Oct. 18, 52 years after his invention of the incandescent lamp and 49 years after the starting of the first station using his system in this country, was followed by nation-wide memorial services. Electric lights were simultaneously extinguished for one minute, where practicable; the suggestion was made to interrupt the supply at the power stations but was not adopted because of the possibly serious consequences under certain circumstances. The occasion focussed

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

world-wide attention upon the pro- | changes resulting from the activities
found social, industrial and economic | of the great inventor.

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

(For further information, the reader may address the following organizations)

AMERICAN WATER WORKS ASSN., 29 W. 39th Street, New York City.	NATIONAL PARKS ASSN., 1512 H St., N. W., Washington, D. C.
INTERNATIONAL ASSN. OF FIRE CHIEFS, Police Headquarters, Philadelphia, Pa.	NATIONAL PUBLIC SERVICE ASSN., 87 Nassau Street, New York City.
NATIONAL ELECTRIC LIGHT ASSN., 420 Lexington Ave., New York City.	PARKS AND PLAYGROUNDS ASSN. OF New York, 1123 Broadway, New York City.

DIVISION IX

DEFENSE AND ARMAMENTS

MILITARY PROBLEMS OF THE UNITED STATES

By ROBERT S. THOMAS

CHIEF CLERK, HISTORICAL SECTION, ARMY WAR COLLEGE

INSULAR DEPENDENCIES

Philippine Islands.—Governor-General Dwight F. Davis has had three main problems before him for solution from the beginning of his administration. The first was the necessity for economic development in the islands; second, the problem of elimination of dishonest and incompetent public officials; and the third was concerned with public-land titles. The Philippine Islands, like the rest of the world, have suffered from depressed economic conditions, although not hit as severely as some other countries. In the face of the lowest prices reached in 40 years, increased volume of production has to a certain extent made up some of the loss. The effort in the Islands continues to be in the direction of stabilization of economic factors to produce a balanced scale. This year, even in the face of unfavorable financial conditions throughout the world, there has been little or no actual physical suffering in the Islands. Steady progress is being made in the development of production factors which shall accord with the market demands of export and import, elements immediately reflected in the well-being of any social unit.

Elimination of dishonest and incompetent public officials, begun in 1929, was continued in 1930. Two provincial governors have been removed from office, and several bureau directors have been forced to resign. Disciplinary action has been taken against many civil-service employees and 150 of them have been dismissed.

The public-land title situation showed improvement during 1931. The number of applications for public lands pending at the close of 1930 was sharply reduced while the number of applications acted upon during the year increased by 60 per cent. For the first time in years, homestead entries allowed exceeded the number of applications.

Porto Rico.—Two progressive steps were taken during the year toward the solution of administrative problems. The first of these was the passage in the insular legislature of a civil service law, comparable in efficiency with any in the States; the second was the enactment of a law providing for a general reorganization of the Island's municipalities. Public school development is advancing rapidly. During the year the number of secondary rural schools has nearly tripled. These schools are intensely practical, being built on farms of 5 to 15 acres and giving first-hand instruction in the most advanced forms of practical agricultural education. The total enrollment in Porto Rican public schools for the year 1930-31 was 226,215 a gain of 4,967 over the preceding year. With the assistance of \$196,000 contributed by charitable associations in continental United States, it has been made possible to maintain 93 milk stations and to feed a daily average of approximately 50,000 Porto Rican children.

ENGINEERING

Rivers and Harbors.—Two prob-

blems of outstanding engineering importance advanced to a settlement during the year. The first was the construction of a bridge across San Francisco Bay, and the second was the rectification of harbor lines in the port of New York. San Francisco Bay, a fine natural harbor, is of vital interest to the Nation in the bearing it has on national defense as a base for naval use. Likewise, it is tremendously important as a port for the interchange of commerce with foreign nations. These two factors were of major significance in considering the erection of a bridge across the bay to serve the citizens of San Francisco and the rapidly growing population centers on the east side of the bay. The Hoover-Young San Francisco Bridge Commission, to which were appointed representatives of the Army and of the Navy, engineers, and prominent citizens of the locality affected, has worked out plans for a bridge which it is believed will meet the requirements of the War and Navy Departments and will satisfactorily serve the citizens of the interested communities.

Growth in the size of ocean liners using New York as a port has necessitated an increase in the length of piers accommodating them. Because of the amount of vessel traffic in New York harbor, the War Department has been forced to curtail rigidly further encroachment of shore structures upon the waters of the port. The Secretary of War has been able to secure the co-operation of the communities affected in New York and New Jersey in working out a plan that will rectify harbor lines in such manner as will permit construction of necessary piers without infringing upon water space necessary to movement of vessels.

The War Department must constantly deal with the problem of supervision of power companies diverting water power from Niagara; with carrying into effect the provisions of the convention between the United States and Great Britain to regulate the level of the Lake of the Woods; and with the construction and maintenance of roads in Alaska.

Muscle Shoals.—The War Department has been especially desirous of finding some solution to the Muscle Shoals problem whereby the plants could be put into operation. At present the nitrate plants are being maintained in "stand-by" condition, pending some appropriate disposition, while surplus power is being disposed of under a revocable contract.

MECHANIZATION AND MOTORIZATION

The use of motor vehicles purely as transportation for troops and supplies is known as motorization. The application of motor vehicles to battlefield as actual weapons belongs to the realm of mechanization. Two theories have been advanced with respect to the application of mechanization to the mission of an army in the field. One theory called for the organization of a separate mechanized force, capable of carrying on from first contact to ultimate victory. The second theory calls for mechanization to permeate the whole Army by having the older, established arms of the service employ any types of motor vehicles which will enable them better to accomplish their missions. The first method has been tried and discarded. At present, each arm of the service has been authorized to conduct research and experimentation seeking the employment of motorization and mechanization wherever practicable and desirable. No separate motorized or mechanized corps will be established; instead machines will be used to increase the mobility, security, and striking power of every ground arm.

RELIEF WORK

Political and economic conditions prevailing throughout the world have been reflected in the United States in a prolonged period of depression which has brought serious hardship and suffering to a considerable portion of our population. Along with the execution of its normal tasks, the War Department has cooperated with other agencies to relieve the suffering attendant upon this depressed period. Governmental construction, providing employment to many, has been ac-

celerated to the limit of available funds. Army cots, blankets, and bedding were loaned to reputable charitable organizations for direct relief work within the several corps areas, and salvaged clothing, shoes, and other items of equipment have been sold at nominal prices to charity units at work in the States. In addition to the normal appropriations for the War Department, the expending of which reaches over the entire country, additional allotments totaling \$58,000,000 were secured from Congress and put to work in construction and maintenance programs that ordinarily would have been initiated several years hence. It has been the aim in this work (1) to provide additional industrial stimulus which should react to the ultimate good of a maximum number of workers and (2) through the careful selection of projects, to prosecute only such as would yield full value to the public for money expended. Extensive spending, closely scrutinized for operation economies, has been the keynote of the Department in this work.

PROCUREMENT PLANNING

The problems encountered in preparing plans to govern Army procurement in an emergency and in making provision for the mobilization of industry to meet war-time needs are among the most difficult and important confronting the War Department. The first step in preparing specific plans is to determine munition requirements and to assemble available statistics relative to production possibilities. The raw material situation in the United States is under constant study, as are the elements of power, transportation, and personnel. It has been the consistent recommendation of the War Department to Congress that great advantage would result to the United States through maintenance of war reserves at a higher level and through a definite educational program designed to familiarize American industrialists and labor with the duties they would be called upon to perform in time of war.

PAY SCHEDULES

Regular Army personnel continues subject to the discouraging effects of stagnation in promotion and inadequate pay. These two factors are most potent in their depressing influences upon officers in the lower grades. Present economic conditions preclude a modernization of Army pay schedules for some time to come, even though the present rates are so low as not to be rectified by the prevailing drop in commodity prices. A modification in the promotion system is being worked upon and is receiving favorable comment throughout the service. When economic conditions shall have stabilized, it is the hope of the Army that Congress will enact necessary remedial legislation adjusting pay schedules in such a manner as will make compensation commensurate with the professional attainments required of an officer.

MAINTENANCE OF PEACE

The War Policies Commission, created by the Seventy-first Congress, has had the cooperation of the War Department in all its sessions. The Commission, composed of six cabinet officers, four senators, and four representatives, is presided over by the Secretary of War. Its problem is to study all angles of modern warfare with a view to promoting peace and, if war is inevitable, to equalize burdens attendant upon armed conflict and to delete profits. American opinion regarding cooperation in time of war has been coalesced by the sessions of the Commission, and just as clearly have definite plans and eloquent pleas for the maintenance of peace been advanced. The findings of this Commission are ready for submission to the next session of Congress.

WORLD WAR RECORDS

There are approximately 119,209,000 records of inactive units and discontinued commands in the hands of the World War Division of The Adjutant General's Office in Washington. In addition, there are approximately 114,366,000 individual personnel docu-

ORGANIZATION OF THE ARMY

ments. During the last session of Congress an appropriation was made available for work on the personnel files, in which category there are approximately 12,000,000 records not yet assorted or filed.

The Historical Section of the Army War College is conducting a meticulous review of the records of those military units of the United States which participated in the World War, and also concurrently is indexing the selected documents of historical value to permit their ready access to scholars, or their subsequent assembly for publication. This same section released during the year a volume entitled, *Order of Battle of the United States Land Forces in the World War—American Expeditionary Forces—Divisions*. This makes available, for the first time, a comprehensive official digest of the principal events in the histories of the 45 American divisions that served in France during the World War.

The activities of these agencies

serve to re-emphasize the need for proper care and housing of the priceless records in the custody of the War Department, many of them at present stored in non-fireproof buildings. The present Federal Building Plan for Washington, calls for the erection of a National Archives Building which should solve the record-housing problem.

ORGANIZED RESERVES

One of the most pertinent problems in this Corps is that of retaining permanently within the Corps a larger proportion of those entering from the Reserve Officers' Training Corps. The Corps has lost by separation from the service about 20% of the officers thus far commissioned from this source. To help solve this problem, reserve regulations have been liberalized to permit promotion of these officers to the grade of first lieutenant without restriction as to vacancies and under very reasonable requirements.

ORGANIZATION OF THE ARMY

By ROBERT S. THOMAS

CHIEF CLERK, HISTORICAL SECTION, ARMY WAR COLLEGE

THE WAR DEPARTMENT

The War Department, the managing agency of the Army of the United States, is presided over by the Secretary of War, a civilian answerable directly to the President. The Secretary (Patrick J. Hurley) is assisted by the Chief of Staff (General Douglas MacArthur) who supervises the military functions; by the Assistant Secretary (Frederick H. Payne) who has charge of the supply, real estate, and war industrial plans; and by another Assistant (F. Trubee Davison) who is responsible for Military Aeronautics. Under this combined direction operate the General Staff and the various arms and branches of the Army. The chiefs of these several arms and branches transmit advice to the Secretary of War through the Chief of Staff and the Deputy Chief

of Staff (Major General George V. H. Moseley).

THE GENERAL STAFF

Composition and Duties.—The General Staff is composed of officers who are selected from all arms and branches of the service. By extended training and specialized schooling, these officers are developed professionally to comprehend all phases of the general problems submitted to them for study. From these studies, they are required to present to their superiors broad and unbiased conclusions for the best interests of the service. On the other hand, the chiefs of the combatant branches and the supply and administrative departments are specialists whose force is trained to give technical and specific advice to the Secretary of War,

IX. DEFENSE AND ARMAMENTS

through the Chief of Staff, concerning particular conditions confronted. None of the officers of the General Staff or heads of arms or departments enjoys the right to command. The duties of each are advisory, supervisory, or administrative. The chain of command is direct from the President of the United States to the Corps Area Commanders in manipulating the Army of the United States. The Secretary of War, however, may give orders in the name of the President to the nine areas of control in the United States proper and to the three other areas beyond the continental limits.

Command Divisions.—The General Staff consists of five Divisions composed of officers of the Regular Army, National Guard, and Organized Reserves. The G-1 Division (Maj. Gen. Albert J. Bowley; succeeded by Brig. Gen. Andrew Moses, Assistant Chief of Staff, G-1) is concerned with personnel, the man-power of the Army and nation. The G-2 division (Col. Alfred T. Smith, Assistant Chief of Staff, G-2) is concerned with world-wide information, collecting, evaluating, and employing it for the good of the service. The G-3 Division (Maj. Gen. Edward L. King, Assistant Chief of Staff, G-3) is concerned with the operations and training of the Army. The G-4 Division (Maj. Gen. Robert E. Callan, Assistant Chief of Staff, G-4) is concerned with the housing and maintenance of the Army. The War Plans Division (Brig. Gen. George S. Simonds; succeeded by Brig. Gen. Joseph P. Tracy, Assistant Chief of Staff, W. P. D.) is concerned with plans for adequate national defense, both at home and in our island possessions.

ADVISORY BODIES

Combatant.—The chiefs and officers of the combatant arms and the heads of departments and services also function as advisors to the Secretary. The combatant branches are: the Infantry (Maj. Gen. Stephen O. Fuqua, Chief); the Cavalry (Maj. Gen. Guy V. Henry, Chief); the Field Artillery (Maj. Gen. Harry G. Bishop, Chief); the Coast Artillery

(Maj. Gen. John W. Gulick, Chief); the Air Corps (Maj. Gen. James E. Feché; succeeded by Maj. Gen. Benjamin D. Foulois, Chief); the Corps of Engineers (Maj. Gen. Lytle Brown, Chief); the Signal Corps (Maj. Gen. George S. Gibbs; succeeded by Maj. Gen. Irving J. Carr, Chief).

Non-combatant.—The non-combatant branches are: The Adjutant General's Department (Maj. Gen. Charles H. Bridges, The Adjutant General); the Inspector General's Department (Maj. Gen. Hugh A. Drum; succeeded by Maj. Gen. John S. Preston; The Inspector General); the Judge Advocate General's Department (Maj. Gen. Edward A. Kreger; succeeded by Maj. Gen. Blanton Winship, The Judge Advocate General); the Quartermaster Corps (Maj. Gen. John L. De Witt, The Quartermaster General); the Finance Department (Maj. Gen. Roderick L. Carmichael, Chief); the Medical Department (Maj. Gen. Merritte W. Ireland; succeeded by Maj. Gen. Robert U. Patterson, The Surgeon General); the Ordnance Department (Maj. Gen. Samuel Hof, Chief); the Chemical Warfare Service (Maj. Gen. Harry L. Gilchrist, Chief); the Bureau of Insular Affairs (Brig. Gen. Francis LeJ. Parker, Chief); and the Militia Bureau¹ (Maj. Gen. William G. Everson, succeeded by Maj. Gen. George E. Leach, Chief).

CORPS AREAS AND DEPARTMENTS

For command and control, the United States and its possessions are divided into Corps Areas and Departments as follows: First Corps Area, including Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut, commanded by Maj. Gen. Fox Conner; Second Corps Area, including New York, New Jersey, Delaware, and Porto Rico, by Maj. Gen. Hanson E. Ely, succeeded by Maj. Gen. Dennis E. Nolan; Third Corps Area, including Pennsylvania, Maryland, Virginia,

¹ Although the National Guard is, of course, a combat organization, the Militia Bureau is here properly listed under the heading "Non-Combatant."

ORGANIZATION OF THE ARMY

and District of Columbia, by Maj. Gen. Fred W. Sladen, succeeded by Maj. Gen. Paul B. Malone; Fourth Corps Area, including North Carolina, South Carolina, Georgia, Florida, Alabama, Tennessee, Mississippi, and Louisiana, by Maj. Gen. Frank R. McCoy; Fifth Corps Area, including Ohio, West Virginia, Indiana, and Kentucky, by Maj. Gen. Dennis E. Nolan, succeeded by Maj. Gen. Hugh A. Drum; Sixth Corps Area, including Illinois, Michigan, Wisconsin, Jefferson Barracks and Arcadia Target Range in Missouri; by Maj. Gen. Frank Parker; Seventh Corps Area, including Missouri (Arcadia Range and Jefferson Barracks excepted), Kansas, Arkansas, Iowa, Nebraska, Minnesota, North Dakota, and South Dakota, by Maj. Gen. Johnson Hagood; Eighth Corps Area, including Texas, Oklahoma, Colorado, New Mexico, and Arizona, by Maj. Gen. Edwin B. Winans; Ninth Corps Area, including Washington, Oregon, Idaho, Montana, Wyoming, Utah,

Nevada, California, and Alaska, by Maj. Gen. Malin Craig; the Hawaiian Department, by Maj. Gen. Wm. Lasater, succeeded by Maj. Gen. Briant H. Wells; the Philippine Department, by Maj. Gen. John L. Hines; and the Panama Canal Department, by Maj. Gen. Preston Brown. These areas and departments are subdivided into tactical divisions and brigades.

ARMY STRENGTH

The strength of the Army of the United States on June 30, 1931, was: Organized Reserves, 120,550 officers (including 12,340 who held commissions in both the National Guard and the Reserve Corps) and 4,837 enlisted men; National Guard, 13,051 officers, 198 warrant officers, and 174,137 enlisted men; Regular Army, 12,322 officers (including 78 Philippine Scouts and 145 Regular Army and Philippine Scouts, Retired, who were on active duty), 1028 warrant officers, and 125,467 enlisted men (including 6,433 Philippine Scouts and 24 Retired who were on active duty).

STRENGTH OF THE REGULAR ARMY BY CORPS AREAS

Corps Area, Department, or Country	July, 1930			June, 1931		
	Officers	Warrant Officers	Enlisted Men	Officers	Warrant Officers	Enlisted Men
First Corps Area.....	454	64	4,217	419	58	4,016
Second Corps Area.....	1,162	121	12,539	1,104	115	11,806
Third Corps Area.....	2,132	151	12,716	2,006	133	12,557
Fourth Corps Area.....	1,058	85	10,123	1,064	80	10,278
Fifth Corps Area.....	493	73	3,262	497	70	3,220
Sixth Corps Area.....	598	57	5,221	631	64	5,671
Seventh Corps Area.....	1,033	75	8,147	961	69	7,491
Eighth Corps Area.....	1,773	142	21,350	1,706	138	21,383
Ninth Corps Area.....	1,095	139	11,899	1,120	132	11,977
Total in continental United States.....	9,798	907	89,474	9,508	859	88,399
Hawaiian Department.....	699	61	13,455	734	55	14,054
Panama Canal Department....	378	45	8,862	395	42	8,630
Alaska.....	9	1	301	10	1	297
Porto Rico.....	63	5	1,043	55	5	1,042
Philippine Department:						
Regular Army.....	518	63	4,106	519	60	4,081
Philippine Scouts.....	62	.....	6,491	59	.....	6,433
China.....	52	2	1,039	51	2	901
Nicaragua.....	26	.....	250	16	.....	130
Japan.....	.....	1	.....	.....	1	.....
Europe.....	33	3	.....	33	3	.....
Miscellaneous.....	636	.....	617	942	.....	1,500
Grand total.....	12,274	1,088	125,638	12,322	1,028	125,467

TABLE SHOWING THE STRENGTH OF THE REGULAR ARMY OF THE UNITED STATES JUNE 30, 1930, AND JUNE 30, 1931, AND LOSSES DURING THE FISCAL YEAR INTERVENING

[illegible]

ORGANIZATION OF THE ARMY

Philippine Scouts:								
Judge Advocate General's Department.....	1							
Quartermaster Corps.....	10	422	10	427				
Medical Department.....		314		310				
Finance Department.....	6			6				
Corps of Engineers.....	5	323	6	325				
Ordnance Department.....		49		44				
Signal Corps.....	2	127	2	125				
Cavalry.....	4	591	3	564				
Field Artillery.....	7	989	7	994				
Coast Artillery Corps.....	9	1,300	9	1,283				
Infantry.....	42	2,359	38	2,355				
Air Corps.....	1		1					
Detached list.....	1		1					
Total.....	82	6,480	78	6,433				
Grand total.....	12,106	124,277	12,177	125,443	490			
Warrant officers:								
Army Mine Planter Service.....	40		40					
Band leaders.....	93		89					
Others.....	956		899					
Total.....	1,089		1,028					
Retired, on active duty:								
Regular Army.....	136	24	133	24				
Philippine Scouts.....	13		12					
Total.....	149	24	145	24				
Aggregate.....	13,344	124,301	13,350	125,467	490			

IX. DEFENSE AND ARMAMENTS

ACCOMPLISHMENTS OF ARMY PERSONNEL

BY ROBERT S. THOMAS

CHIEF CLERK, HISTORICAL SECTION, ARMY WAR COLLEGE

INFANTRY

Organization.—Tables of organization for an infantry regiment, approved by the War Department in November, 1930, have been subjected to further testing during 1931. Final adoption has been postponed until actual experimentation with the reorganized war strength 29th Infantry Regiment, at Fort Benning, Georgia, proves their worth. As now constituted, this regiment consists of a regimental headquarters and headquarters company; three battalions, each consisting of a headquarters and headquarters company, three rifle companies and a machine gun company; a regimental machine gun company; a cannon company; and a service company. The principal changes effected are: automatic rifles in the squad increased from 1 to 2; caliber .30 machine guns in the battalion increased from 12 to 16; the addition of a regimental machine gun company of 16 guns; 37-mm. guns and 75-mm. mortars increased from 3 to 8 and incorporated in a new unit, the cannon company; and the motorization of the field train. Total regimental personnel is increased from 3,008 to 3,577.

Weapons.—Several types of caliber .276 semi-automatic rifles have been tested and an effort has been made to secure a .30 caliber semi-automatic rifle which would employ the same ammunition used in the present magazine rifle. The Browning tank machine gun has been studied during the year for the purpose of developing a light machine gun, capable of being carried and operated by the foremost infantry combat troops, thus materially increasing firepower of the infantry.

Motorization.—The only completely motorized Infantry Regiment, —the 34th—was ordered demobilized and its equipment has been transferred to a battalion of the 29th In-

fantry at Fort Benning, where further experiments in connection with motorization projects will be conducted.

Anti-aircraft Defense.—Marked progress has been made in the study of Infantry defense against low-flying aircraft. Defense formations have been improved and greater accuracy in small arms fire has been achieved. Training in the use of the rifle and the automatic rifle in anti-aircraft firing has so progressed that Infantry units regard the danger from attacking aircraft as no greater than that of other battlefield hazards.

Tanks.—The Tank Board and the Infantry Board have been consolidated at Fort Benning, and, at the end of the 1931-32 school year, the Tank School will be moved from Fort George G. Meade, Maryland, to Fort Benning. This will concentrate all Infantry service school courses at Benning. The Christie medium tank, seven of which were ordered during the year, is believed to meet the Infantry's demands for a fast, dependable tank. Its outstanding features are: combination wheel and track principle, high rate of speed over roads and across country, and individual spring suspension for each wheel. This tank, on wheels, has attained a 70-mile an hour speed on concrete roads and, on caterpillar tracks, a 42-mile an hour rate across country.

CAVALRY

Maneuvers.—The cavalry held maneuvers in various sections of the country. Those of the First Cavalry Division, conducted over desert and mountain regions in Texas and New Mexico, were of particular interest in testing improved means of air and radio control of large bodies of troops, operating over an extended front with widely separated intervals. In the Fourth and Eighth Corps Areas, cavalry participated in joint maneu-

ACCOMPLISHMENTS OF ARMY PERSONNEL

vers with other arms of the service and at Fort Riley, Kansas, maneuvers were conducted by school troops. Carrying full field equipment, which included 37-mm. guns and .30 and .50 caliber machine guns, a cavalry force made an 100-mile forced march from Fort Riley. This was accomplished in 23 hours elapsed time, 18¾ hours actual marching time and, at its completion, men and animals were in excellent condition.

Material and Equipment.—Effort has been concentrated on the development of types of automotive equipment best suited for our terrain conditions. For this purpose, two types of armored cars have been perfected, a convertible type (wheel and track) combat car, and a six-wheel reconnaissance car with four-wheel drive. Regimental firepower was increased by replacing machine rifles in the rifle troops with air-cooled .30 caliber Browning machine guns, modified for carrying on the standard pack-saddle. For use against armored cars, a number of 37-mm. guns have been adopted for experimental purposes. A .50 caliber air-cooled machine gun with detachable barrel is also undergoing test. Radio combination receiving and transmitting sets are under development, both for use in armored cars and by men on horseback.

FIELD ARTILLERY

Material and Equipment.—As a result of extensive tests, the Browning .30 caliber automatic rifle was recommended for issue to field artillery troops for anti-aircraft defense. The 2d Field Artillery Regiment, stationed in Panama, was equipped with the new standard 75-mm. pack howitzer which, it is believed, will prove an extremely effective weapon when used as accompanying artillery with an infantry division and as supporting artillery with a mechanized force. Special mounts, capable of all-around fire at elevations up to 80 degrees, are being fabricated for this new gun, thus affording it anti-aircraft characteristics. A pilot model of a new 155-mm. gun—8" howitzer carriage is ready for testing. If satis-

factory, it will provide increased mobility and speed of entry into action, together with a 6,000 yard increase in range. A speedy and inexpensive moving target has been perfected whereby field artillery units can practise firing under conditions approximating those which would obtain on a modern battlefield.

Communications.—At the Field Artillery School, consistent effort has been directed toward developing better communication between plane and gun. Radio has been steadily employed and will, of course, eventually altogether displace wire lines as a means of communication during actual battle conditions.

Horsemanship.—Long and arduous marches, accompanying other mounted troops, demonstrated the high standard of horsemanship maintained at the Field Artillery School and throughout the service. Field Artillery teams have earned outstanding credit for their splendid horsemanship in the great international horseshows both at home and abroad.

COAST ARTILLERY CORPS

Organization.—The reorganization of the Corps during 1930, whereby all active Corps Artillery units in continental United States were concentrated in six harbor defenses, while all other harbor defenses were placed on a maintenance status, has resulted in increased efficiency both in troop training and in training of civilian components.

Maneuvers.—Defense plans, intelligence systems, and training methods were tested in joint Army and Navy exercises held in the Harbor Defenses of Pensacola, in Hawaii, in the Philippine Islands, and in Chesapeake Bay. Those held in the latter location involved an entire sub-sector of the coastal frontier rather than the customary single harbor defense. Troops in the Canal Zone demonstrated the facility of maneuver of 14-inch railway guns by transporting one of them from Culebra Island at one end of the Canal to Fort Randolph at the other end, emplaced, ready to fire in nine hours, without

IX. DEFENSE AND ARMAMENTS

securing right of way over ordinary traffic on the Panama railway.

ENGINEER CORPS

The Corps strength at the end of the fiscal year was 575 officers and 4,641 enlisted men. Three officers of the Corps serve the civil government of the District of Columbia; two are assigned to the Federal Power Commission; four, with the American Battle Monuments Commission; and one with the Arlington Memorial Bridge Commission. Three engineer officers are detailed to the Panama Canal Zone civil government, one serving as Governor of the Zone. An engineering expedition, under command of Lieut. Colonel Dan I. Sultan, Corps of Engineers, completed a survey for an interoceanic canal across the Republic of Nicaragua. Seven officers and thirty-five enlisted men of the Corps were engaged in relief duty after the earthquake which destroyed Managua, fighting fire, restoring water supply, and assisting the American Red Cross. The United States has been divided into 11 territorial power zones, each under the control of a district engineer, for the purpose of bringing up to date a survey begun in 1922 of electric power plants and resources of the United States. Map survey work was carried on principally in the First and the Second Corps Areas, and the Engineer Reproduction Plant prints the results of these surveys in quadrangle sheets, available for public use at a nominal cost.

SIGNAL CORPS

Radio.—The Army radio system consists of 110 fixed and land stations comprising the War Department Net, Corps Area Net, and Air Alert Net; thirty-seven stations comprising the Alaskan System, and approximately 70 stations on Army boats, the most important of which are seven United States Army transports. Radio stations located at Corps Area and Departmental Headquarters constitute the War Department Net, with station WAR in Washington as net control station. Separate units in each Corps Area and Department have

radio stations organized into a Corps Area or Department Net with Corps Area Headquarters stations as the Net control station. All stations at military aviation posts operate with each other as an Air Alert Net for handling meteorological information and messages relating to plane movements. Stations of the Alaskan System handle both government and commercial traffic, while all other stations handle only government traffic, which includes messages for all the executive departments, independent bureaus, and commissions. During the year, 10 kw. high frequency transmitters were installed at Washington, at Ft. Sam Houston, Tex., and at San Francisco. New intermediate frequency transmitters of 2 kw. power output were also installed at Washington; Governor's Island; Ft. Hayes; Chicago; Ft. Leavenworth; Ft. Omaha; and San Francisco. In the Alaskan System, complete new transmitter stations were installed at Seattle and at Anchorage. A new receiving station was also begun at Ketchikan. The Seattle transmitting station, located in West Seattle, is equipped with two 10 kw., one 1 kw., and one $\frac{1}{2}$ kw. high frequency transmitters, and one 10 kw. intermediate frequency transmitter. Incoming signals are picked up at a remote receiving station located at Fort Lawton and transmitted over land wires to the central office. The new transmitting station at Anchorage, Alaska, is equipped with two 10 kw. and one 1 kw. high frequency transmitters, and one 4 kw. and one 500 watt intermediate frequency transmitters. The receiving station under construction at Ketchikan is located at Mountain Point. The transmitter station, two miles from Ketchikan, is equipped with two 1 kw. high frequency and with one 10 kw., and one $\frac{1}{2}$ kw. intermediate frequency transmitters. This equipment affords two duplex channels between Seattle and Anchorage and from Seattle to Ketchikan. It will parallel the Seattle-Ketchikan-Seward cable and make possible the retirement of the cable ship, *Dellwood*. During September and October, when

ACCOMPLISHMENTS OF ARMY PERSONNEL

the Seattle-Ketchikan cable was interrupted for six weeks, it was necessary to rely on this radio system, even though it was not then completely installed. Service proved satisfactory and speedy.

Meteorological Service.—The Signal Corps operates thirty-five meteorological stations within the borders of the United States and, in addition, one in the Hawaiian Islands, one in the Philippines, and one in the Canal Zone. This service is freely used by all other governmental agencies and particularly effective cooperation was maintained during the year between the meteorological service of the U. S. Weather Bureau, the Army, and the Navy. This cooperation eliminated duplication of effort and made available to each of these three services the results of observations made by all.

Photographic Service.—The Army Pictorial Service provides general photographic service for the Army, excepting specialized photography employed by certain technical branches. The custody of the War Department's pictorial historical files is shared by the Signal Corps and the Historical Section of the Army War College. Veteran and patriotic organizations secure the loan of motion picture films, covering historical and military subjects, and Reserve and National Guard organizations use them as a most desirable means of graphically presenting the varied activities of the Army.

Telephone and Telegraph Service.—At the end of the year, the Signal Corps operated 138 telephone switchboards and 25,268 sub-stations. In addition, two telephone systems are jointly owned by the Government and commercial telephone companies.

Army Amateur Radio System.—This system, entirely voluntary in operation, numbers over one thousand active members, with an inactive reserve of about five hundred. In time of disaster, this net stands ready to serve the American Red Cross with which it is affiliated.

Statistics.—The total amount of Government traffic handled by Signal

Corps communication facilities during the fiscal year 1931 was 71,658,340 words. The value of original sent traffic was \$754,792.05. The total number of original sent messages was 552,121, containing 25,527,814 words.

THE MILITIA BUREAU

Organization.—The reciprocal military relationship existing between the state and the Federal Governments is administered through a bureau of the War Department called the Militia Bureau, whose chief is a National Guard officer holding a commission as Major General in the Officers' Reserve Corps of the Army of the United States. For 1931, the authorized strength of the National Guard was fixed at 190,188. Actual strength on June 30, 1931 was 187,386, divided among 834 headquarters and 3,191 units, scattered throughout continental United States, Porto Rico, and Hawaii. On June 30, 1931 there were 18 Infantry and 4 Cavalry Divisions which had received Federal recognition.

Air Units.—There are 19 airplane observation squadrons in the National Guard; these accumulated a total of 71,466 man hours of flight during the year. The Air Corps command and staff exercises held during May, 1931, afforded the Air Corps of the National Guard its first opportunity to demonstrate its progress in training. There was noticeable improvement with respect to aerial gunnery and the entire Corps benefitted by the possession of new flying equipment and airdrome installation facilities recently procured.

Training.—National Guard training is supervised by officers of the Regular Army and consists of a minimum legal drill requirement of 48 drill periods yearly, each of not less than one and one-half hours' duration, in addition to fifteen days of field training in encampments or maneuvers. For these drill periods, compensation is provided from the Federal appropriations for each drill attended by officers and men at approximately one-thirtieth of the monthly pay for like grades in the Regular Army, while compensation

IX. DEFENSE AND ARMAMENTS

for the fifteen days of field training is the same as for the Regular Army. The aggregate enrollment at the field training camps was 172,907 National Guardsmen while 295 officers and 131 enlisted men attended regular and special courses at the Army service schools. Twenty enlisted men of the National Guard qualified for admission to the United States Military Academy on June 30, 1931. National Guard officers may also be detailed for duty in the Militia Bureau and on the War Department General Staff, both for the purpose of giving instructions and to bring to the consideration of important policies the viewpoint of the citizen-military forces.

Construction.—The outstanding feature of the year for the Militia Bureau was the Congressional appropriation for camp construction, primarily to assist in relieving the unemployment situation throughout the United States. An appropriation of \$1,000,000 was made available on Feb. 7, 1931 since which time 232 out of 472 projects for camp construction have been completed at 52 camps in 42 states.

THE ORDNANCE DEPARTMENT

Weapons and Munitions.—The development of the centrifugal casting process for gun tubes has been continued and a number of 37-mm. guns, 75-mm. mortars, 75-mm. howitzers, and 105-mm. howitzers have been satisfactorily cast by this method. A new method of manufacturing Belleville springs by forging them from bar stock, instead of making them from rolled plate, is under development. Experimentation in the use of metallic packing instead of rubber and leather packing now used in recoil mechanisms has been continued and several recoil mechanisms are now ready for service test. Two types of all-purpose gun carriages of 75-mm. caliber which permit all-around fire with elevations sufficient for use against aircraft have been constructed. They can also be used against ordinary field artillery targets as well as against fast moving armored cars and tanks. An ex-

perimental 8-inch howitzer carriage, designed to travel at speeds up to 40 miles per hour on pneumatic tires, has been built. This carriage will also mount a new 155-mm. gun, the most powerful piece of artillery at present contemplated for our Army. Development of high-speed tanks and armored cars has continued and several types are being tested. An anti-aircraft multiple machine gun truck mount, designed to protect marching troops, is under manufacture. A removable tube for the 3-inch fixed anti-aircraft gun has been designed and will shortly be ready for testing. An improved type of continuous fuse setter, designed to prevent the frequent erratic bursts which occur with the present type, is ready for testing.

Ordnance Districts.—The policy of the War Department for industrial mobilization in time of an emergency is still actively continued to assure availability of adequate facilities for such items as may be required. In order to attain this result, the country is divided into fourteen Ordnance Districts, in each of which is an organization of eminent civilian business and technical men as reserve officers who are doing in peace the maximum of practical planning to accomplish the necessities of war production. Various plants and factories are included in the operation of this plan since they have signified their willingness to take over a certain percentage of the production burden and make those studies necessary to the proper adaptation of their facilities in order that needed articles may be produced without disturbing normal peace-time operations.

THE MEDICAL DEPARTMENT

During the year the Medical Department of the Army was responsible for the health, professional care, and treatment of approximately 288,000 individuals. The relative number of sick was the lowest in the history of the Army, the admission to sick report for all causes during the year having declined from 649 to 608 per thousand. Owing to the advance made by the Medical Department in the prevention of disease, the Army

ACCOMPLISHMENTS OF ARMY PERSONNEL

sick rate has decreased 75 per cent in 100 years and almost 50 per cent since the period just preceding the Spanish-American War. For the same periods, the death rate has declined 86 and 45 per cent, respectively. An improved vaccine against rabies has been perfected and found to be very efficacious. A bulletin covering the hospital requirements of war time has been published under the title, "War Casualties and Their Relation to Medical Service and Replacement." Several treatises on the control of communicable diseases were also published.

THE CHEMICAL WARFARE SERVICE

Organization.—Under tables of organization approved July 1, 1931, the Chemical Regiment was made a motorized unit. For short distances mortars and ammunition are carried forward on light hand carts, drawn by four men; for distant movements, motor trucks are used. A detachment of one officer and 15 enlisted men from the First Chemical Regiment was sent to Fort Eustis, Virginia, as an experimental unit to cooperate with the Experimental Mechanized Force. This unit, equipped with one 4.2 inch Chemical Mortar, mounted on a TIEL Cargo Carrier, and with one 4.2 inch Chemical Mortar unmounted, demonstrated that the Chemical Mortar was a necessary adjunct to a mechanized force. As a result, a platoon of Chemical Mortars will be permanently attached to the mechanized Cavalry Regiment.

Material.—During the year, excellent progress was made in research and development, test and adoption of Chemical Warfare material. Emphasis was placed on the reduction in cost of the more expensive items of equipment and supply, and in the simplification of manufacturing processes. A total of 25,974 gas masks was produced for the Army, in addition to those manufactured for various governmental agencies to afford protection in refrigerating plants, fire departments, and in fumigation work.

THE FINANCE DEPARTMENT

Functions.—This is the agency through which the War Department pays its personnel and bills, makes collections due, and audits property accounts in the hands of accountable officers. The Chief of Finance, as War Department Budget Officer, is charged with compiling and submitting to the Bureau of the Budget all estimates of funds for the several branches and services required for inclusion in the annual War Department appropriations made by Congress.

Commercial Invoices.—Every bill incurred by the War Department is met on a cash basis, thus effecting considerable savings. During the past fiscal year, 574,995 commercial invoices were handled. Most of these indicated a discount date, through which channel \$387,688.91 was earned. Since 1930, the Finance Department has saved the Government \$3,498,892.83 by taking advantage of discounts offered. Vouchers for the year totaled 896,528, representing an aggregate disbursement of \$359,201,017.55.

Property Accounting.—All items of property purchased for the military establishment from monies appropriated by Congress for the support of the Army as an agency of national defense are audited by the Finance Department. This includes all real estate, buildings, docks, piers, army transports, and machinery, as well as supplies purchased and issued to clothe, feed, and equip troops for field and garrison service. Property accounting records of the non-military or civilian activities of the War Department are not audited by the Finance Department. In the hands of Army agencies at present, excluding value of grounds and buildings, there is property worth well over \$2,000,000,000. The accountability of this property is divided among some 3,300 accounts which are audited at least once annually.

Savings Accounts.—Since 1873, soldiers' savings may be deposited in sums not less than \$5.00, to draw interest at 4 per cent. Such deposits

IX. DEFENSE AND ARMAMENTS

are returned to the soldier with accumulated interest upon separation from the service. This provision was initiated to care for soldiers' savings when most of the Regular Army was on frontier duty where there were no banking facilities. Cases of enlisted men retiring with sums above \$5,000 to their credit are not rare. Records show the largest single depositor at present to be credited with \$20,000. Deposits totaling \$1,077,666.03 were recorded in the past fiscal year, the number of active depositors as of June 30, 1931 being 6,816. The Government paid \$24,304.56 interest on these accounts. From June 30, 1873 to June 30, 1931, the sum of \$70,528,646.22 has been deposited through this Army channel, and it has earned \$3,701,775.03 in interest.

THE BUREAU OF INSULAR AFFAIRS

The Bureau of Insular Affairs constitutes the normal channel of communication in both directions between, on the one hand, the War Department and other agencies in the United States and, on the other hand, the insular governments subject to War Department jurisdiction. The Bureau's functions are, as regards the insular possessions in question, in many respects analogous to those of a Colonial Office for Civil Affairs. It acts in all matters pertaining to civil government in the island possessions of the United States. Its detailed activities are not prescribed by Congress, but are subject to the control of the Secretary of War to whom its services are available. Supervision under the War Department of Philippine affairs has now been continuously exercised for over thirty years and over Porto Rican matters for over twenty years. During that time, the Bureau of Insular Affairs has handled bond issues amounting, for the Philippines, to over \$140,000,000, and for Porto Rico, to over \$38,000,000. It has purchased of the same bonds, for Philippine Islands sinking fund accounts, more than \$30,000,000. It has handled deposits in the United

States of Philippine public funds running well over \$49,000,000 and has secured for these deposits a high rate of interest. For the past five years, the Bureau supervised island purchases in the United States of supplies averaging annually \$2,185,000. In the current year, the Bureau handled Porto Rican bond issues amounting to \$500,000 for Workmen's Relief, \$150,000 for the Isabella Irrigation Project, and \$500,000 for hydroelectric development. During the fiscal year 1931, Federal appropriations totaling \$2,000,000 were made available to the Porto Rican Hurricane Relief Commission. In addition, Congress appropriated for roads the sum of \$1,000,000 to become available in 1932. The Bureau of Insular Affairs also supervises the Receiver-ship of Dominican Customs, which is charged with the collection of the customs of the Dominican Republic and the rendition of appropriate accounts and reports incidental to those duties.

ADJUTANT GENERAL'S DEPARTMENT

Functions.—The Adjutant General, as the administrative officer of the War Department, handles a voluminous correspondence of all kinds. During the fiscal year, 3,086,506 separate pieces of mail matter were received, distributed to proper divisions, and disposed of either by recording and filing or by having appropriate answers dispatched. In January, 1931, a total of 235,736 communications were received, the largest amount entering the office during a single month, while the high mark for a single day was 22,771 on April 6, 1931.

Library Service.—The Army Library Service, under the direction of The Adjutant General, operated 166 main, 19 branch, 157 traveling, and 5 Army transport libraries. A total of 19,904 books and 2,490 periodical subscriptions was purchased during the year and put into circulation.

Motion Picture Service.—Talk-

ing motion picture equipment was installed in 27 War Department theaters, bringing the total of theaters so equipped to 74. Altogether 15,165 complete programs were scheduled during the year with a total attendance of 4,421,173; in addition, 534 programs were presented on Army transports.

World War Records.—During the fiscal year 1931, 220,000 documents relating to inactive units and discontinued commands were received for file, bringing the total of this character of records to approximately 119,209,000. For the same period, 483,000 documents were added to the individual personnel files, swelling that total to approximately 114,366,000 documents.

THE QUARTERMASTER CORPS

Subsistence.—Local quartermasters at posts and camps now make direct purchases of all food necessary for organization messes. Storage of subsistence supplies at depots has been eliminated. This has operated to produce four complete turn-overs in staple commodities and twelve in semi-staple and perishable subsistence supplies during the year, giving the Army dollar a much greater purchasing value. Deterioration, wastage, and spoilage percentages have dropped remarkably under the operation of the present plan of buying. Wherever possible, the Army buys directly from the producer or manufacturer and specifications for Government purchase are drafted around prevailing commercial practices in processing, packing, and packaging. Savings resulting from the present subsistence system of feeding our Army are estimated at \$120,000 annually, in addition to providing the soldier with fresher and better food supplies.

Cemeterial.—During the year, there were 3,525 interments in national cemeteries in the United States, bringing the total figure up to 416,523, while in Europe, in the eight permanent cemeteries, there were on June 30, 1931 a total of 30,836 interments.

The Quartermaster General supervises 81 national cemeteries in the United States, 1 in Mexico, 1 in Alaska, and 8 in Europe. Twenty additional bodies, heretofore unknown, in registered graves on European battlefields have been identified during the year and 36 bodies of those reported missing were recovered, 31 being interred in properly registered graves abroad and 5 returned from France and delivered to relatives in the United States.

Pilgrimages of Mothers and Widows.—To date, a total of 17,366 mothers and widows have been listed as eligible to make the pilgrimage to European cemeteries. During the current year 1,766 have made the voyage, bringing the total for 1930 and 1931 up to 5,419. These pilgrimages are provided at the expense of the United States and may be taken at times designated by the Secretary of War between May 1, 1930 and October 31, 1933. The schedule of each group provides for approximately two weeks stay in Europe.

Disposal of Waste Material.—The War Department derived \$573,406.36 from the sale of condemned public property and waste property and \$103,242.46 from the sale of garbage, manure, and dead animals during the year. In addition, salvaged property and waste materials to the value of \$159,368.43 was turned over to other branches of the Federal Government.

Real Estate.—Total sales of real estate disposed by the War Department during the year reached \$56,869.50. As a result of this year's and previous years' sales the sum of \$2,029,252.15 has been deposited in the United States Treasury. From 1500 revocable leases the War Department received \$699,430.79 while for 626 leases covering the use of private property it paid \$406,322.31. Twenty-nine real estate parcels were purchased during the year at a cost of \$246,236.

Horse Breeding.—During the 1931 breeding season, over 19,000 mares were bred to 650 stallions, and it is

IX. DEFENSE AND ARMAMENTS

estimated that the result will produce approximately 13,000 foals. Since the inauguration of the Army Horse Breeding Plan in 1921, approximately 130,000 mares have been bred, resulting in a foal production in excess of 85,000.

Housing Program.—Since 1927 and including the fiscal year 1931 a total of \$53,306,759 has been appropriated by Congress for the Army ten-year housing program. This has provided permanent housing for 25,859 enlisted men, 1,001 warrant officers and non-commissioned officers, 1,111 officers, 267 nurses, and 1,672 hospital beds.

Memorials.—Surrounding conditions have been improved and new approaches have been built for the Tomb of the Unknown Soldier in the Arlington National Cemetery. Congress has provided for the preservation and improvement of the Lincoln Birthplace Memorial near Hodgenville, Larue County, Ky., and this work is rapidly nearing completion under the direction of The Quartermaster General. Restoration was ordered and is nearing completion of the home of the "Star Spangled Banner" at Fort McHenry, Md., and of the Lee Mansion in Arlington National Cemetery.

THE INSPECTOR GENERAL'S DEPARTMENT

During the year, 41 officers, including the Inspector General, were on duty in this Department. These were divided among corps area headquarters, departments, divisions, War Department General Staff, and The Inspector General's Washington office. During the last two years, the Department's inspection and investigations have broadened along lines of efficiency recognized in industrial management. Special features of this new development relate to economic and efficient utilization of funds, property, plants, and installations having a direct bearing on national defense. From this basis, 58 investigations, resulting in corrective measures, were conducted during the year. The Graves Registration Service in

Europe and the Soldiers' Home in Washington, were inspected by The Inspector General himself and both were the subjects of favorable reports.

JUDGE ADVOCATE GENERAL'S DEPARTMENT

Courts-Martial.—For the year, 3,856 records of trial by general court-martial were examined. In 11 cases, the record was held legally insufficient to sustain any sentence. In 19 other cases errors affecting the substantial rights of the accused were discovered, requiring a partial reversal of the judgment of the court. A majority of all offenses thus charged were either desertion or absence without leave.

Contracts and Reservations.—Questions connected with contracts made under the jurisdiction of the Secretary of War, with real estate under his control and matters affecting the improvement of rivers and harbors, led to references that resulted in the preparation of approximately 900 formal written opinions.

Claims and Bonds.—Questions connected with contractors' bonds and with claims in favor of or against the Government caused the preparation of more than 800 formal opinions.

Miscellaneous.—Approximately 600 written opinions were prepared on a wide range of subjects. In cooperation with the Bureau of Insular Affairs, the Judge Advocate General represented the Philippine and the Porto Rican Governments before the United States Supreme Court and before the Court of Appeals in questions arising from bond issues. In the Court of Claims, the Judge Advocate General functioned with respect to 450 litigated claims heard during the year, involving over \$700,000,000. The Law Office received accessions of 501 books for its library.

CORPS OF CHAPLAINS

During the year 18,267 services, attended by approximately 1,639,040 people, were conducted on military reservations and transports. Practical training of newly appointed chaplains is provided, either at an army post

ARMY AERONAUTICS

in the vicinity of Chicago, or at Washington. Four chaplains per year are accorded the privilege of post-graduate study, choosing from among the Ohio State University, the Catholic University of America, and the University of Chicago for entrance. A new chapel at the Presidio of San Francisco was occupied in June; several others were remodeled, while two were lost by fire, one at Fort Sheridan, Ill., and one at Schofield Barracks, Hawaii. The Army Church has now passed the experimental stage and several new units were organized during the year, electing their officials from the rank and file of enrolled membership. Regular Army chaplains were increasingly active in the summer training camps where they exerted a steady influence upon the trainees.

CIVILIAN PERSONNEL DIVISION

Under Administrative Assistant,

John W. Martyn, this office exercises administrative control in matters pertaining to civilian employees in the War Department and with the Army. This task involved during the past year decisions of all matters of civil service law and rules, classification allocations and schedules, retirement determinations, and compensation changes for a force of civilian employees, departmental and field, approximating fifty thousand in number.

PANAMA CANAL

The Panama Canal, while not a part of the War Department, is under the personal supervision of the Secretary of War, and its present Governor, Col. Harry Burgess, is an officer of the Engineer Corps. The total number of transits through the canal during the fiscal year was 5,529 with a net tonnage of 27,792,146 tons. Tolls collected amounted to \$24,645,456.57.

ARMY AERONAUTICS

By ROBERT S. THOMAS

CHIEF CLERK, HISTORICAL SECTION, ARMY WAR COLLEGE

AIR CORPS PROGRAM

Enlisted Personnel.—The date June 30, 1931 marked the end of the fourth year of the Air Corps 5-year program of expansion. Of the objectives of this program, only one,—enlisted strength—is being met at present. A considerable number of vacancies in non-commissioned grades and ratings were allotted to the Air Corps during the year, at the expense of the rest of the Army. Through this, competent men were promoted to higher grades and incentive provided for advancement in the lower grades. This increase in grades and ratings has produced an increased number of reenlistments and has materially reduced the turnover among the enlisted strength of the Corps.

Commissioned Personnel.—During the fiscal year the number of officers commissioned in the Air Corps

increased only from 1,203 to 1,236 so that there is at present a shortage of 190 Regular Army officers commissioned in the Air Corps and 187 Reserve officers on extended active duty. In the grade of second lieutenant in the Air Corps there still remain 203 vacancies. Since there was a gain of only 33 in officers commissioned during the past year, it is evident that the commissioned personnel situation is one for serious study and which can only be alleviated by a better promotion system than obtains at present.

Planes.—The end of the fourth increment of the 5-year program calls for 1,659 serviceable planes to be on hand; there were but 1,476, a shortage of 183. However, in so far as the planes on hand are concerned the Assistant Secretary of War, F. Trubee Davison, in his annual report states

IX. DEFENSE AND ARMAMENTS

that, "... the Air Corps is better equipped to-day from every standpoint than at any time in its history." In the number of airplanes that could be used in operations against an enemy at the beginning of hostilities, tactical strength, the United States stands fourth in the world (Army Air Corps and Naval Air Service added together in determining this rating).

CONSTRUCTION

During the fiscal year, considerable progress was made toward completion of the housing and technical construction required to meet the expansion of the Air Corps. The new training field at Randolph Field was ready for occupancy and operation on Nov. 1; new barracks and quarters were erected at Selfridge and Mitchell Fields; and construction projects, to be completed during 1932, were initiated at Barksdale Field, Albrook Field (Canal Zone), and Wheeler Field (Hawaii). To date, \$29,467,805 has been appropriated for housing and \$17,355,880 for technical construction.

MANEUVERS

A provisional Air Division was organized to participate in the annual Air Corps exercises which were held last May. This Division consisted of 663 planes, 692 officers, 69 flying cadets, and 643 enlisted men concentrated on the eastern seaboard from all parts of the United States. Of the total number of planes, 663, there were 449 that should be classed as first-line planes, tactical types that could be used in operations against an enemy, and 214 planes of either training or transport types. This group operated as a division, frequently under unfavorable weather conditions, and the units which composed it returned to their home stations after flying a total of 38,000 airplane hours, for an estimated distance of 4,000,000 airplane miles with no fatalities or major injuries and with substantial damage to but three airplanes.

MATERIEL

During the year an effort has been made to develop an aircraft engine with more horsepower per pound of engine weight. The attempt to achieve this has been through higher operating speeds and compression ratios, supercharging, improved fuel, and fuel metering. Initial procurements are now being made of pursuit types of airplanes having a high speed of 214 miles an hour, as compared with the 175 miles speed of present standard types. New observation types, with speeds at 182 miles per hour, have been developed. This is an increase of approximately 40 miles per hour over existing observation types. Radio equipment and fog navigation instruments are constantly being improved for adaptation to airplane use.

ACCIDENTS

For the fiscal year, the number of fatal accidents decreased from 37 to 21 and the number of fatalities from 52 to 26 over last year. This is at the rate of one fatal accident per 18,900 flying hours or 2,079,000 plane miles as compared with an accident ratio of one fatality for every 8,785 hours or 900,000 miles for the previous year.

STATISTICAL

Air Corps Strength.—The strength of the Air Corps on June 30, 1931 was: Officers, 1,291; Enlisted Men, 13,194.

Flying.—Army airplanes were flown during the fiscal year a total of 396,961 aircraft hours or approximately 44,000,000 miles. This was an increase of 71,737 hours over the preceding year.

Reserve Officers.—An average of 241 Reserve officers was on extended active duty with tactical units during the year. These officers flew a total of 67,391 hours.

Air Maneuvers.—All of the 19 National Guard Air Squadrons participated in the Air Corps annual maneuvers. These squadrons accumulated a total of 39,431 aircraft flying hours during the 1931 fiscal year.

MILITARY EDUCATION

MILITARY EDUCATION

BY ROBERT S. THOMAS

CHIEF CLERK, HISTORICAL SECTION, ARMY WAR COLLEGE

INFANTRY SERVICE SCHOOLS

Functions.—The Infantry and the Tank Schools endeavor to train officers and enlisted men of Infantry units of the Regular Army, National Guard, and Organized Reserves in Infantry tactics and technique, and to impart a working familiarity of these fundamentals in associated service arms.

The Infantry School, located at Fort Benning, Georgia, has completed its eleventh year of successful operation. During this period, 2,529 of 3,689 Infantry officers have graduated from one or more courses at this school. The following courses were carried on in 1930-31: Advanced Course, 84 graduates; Company Officers' Course, 126 graduates; National Guard and Reserve Company Officers' Course, 125 graduates (88 National Guard, 37 Reserve Corps); National Guard and Reserve Field Officers' Course, 18 graduates, all from the National Guard; Refresher Course, 17 graduates; Enlisted Men's Horse-shoers' Course, 18 graduates; National Guard Enlisted Specialists' Course, 43 graduates.

The Tank School, located at Fort George G. Meade, Maryland, has completed its twelfth year of successful operation. To date, 320 Infantry officers have graduated from its courses for Regular Army officers. In 1930-31, the following courses were taught: Regular Officers' course, 55 graduates; National Guard and Reserve Officers' course, 15 graduates. For enlisted men, the following courses were maintained: communications, 9 graduates; battery repair and maintenance, 9 graduates; clerical, 13 graduates; stenography, 12 graduates; reconnaissance, 10 graduates; motor mechanics, 46 graduates.

CAVALRY SCHOOL

The Cavalry School, located at Fort Riley, Kansas, trains officers and

enlisted men in cavalry technique and in fitting them to qualify as instructors in cavalry subjects. The following courses were carried on in 1930-31: For the Regular Army Officer, Troop Officers' course, 28 graduates; advanced class, 14 graduates; advanced equitation, 17 graduates; refresher course, 5 graduates. For the National Guard and Organized Reserve Officer, Troop Officers' course, 24 graduates; advanced class, 8 graduates. For enlisted men, Noncommissioned Officers' course, 31 graduates; horseshoers' course, 42 graduates; saddlers' course, 28 graduates. During the school year, one officer attended *l'École de Supérieure de Guerre* in France and one attended the French Cavalry School at Samur; one attended the Italian Cavalry School, two the German, two the Polish, and one the Swedish Cavalry School. Fifty-one Cavalry officers attended courses at other service schools and one was enrolled in the Harvard University School of Business Administration.

ARTILLERY

The Field Artillery School, located at Fort Sill, Oklahoma, serves as an agency of the Chief of Field Artillery in the development of Field Artillery technique and tactics, and disseminates that knowledge to all components of the Army. During 1930-31, the following courses were conducted:

Officers	Graduated
Advanced Course.....	33
Battery Officers' Course.....	66
Advanced Horsemanship Course....	6
Advanced Course in Motors.....	4
Refresher Course.....	4
National Guard & Reserve Battery Officers' Course (Fall).....	35
National Guard & Reserve Battery Officers' Course (Spring).....	23
National Guard & Reserve Field Officers' Course.....	7
Total.....	178

IX. DEFENSE AND ARMAMENTS

Enlisted Specialists	Graduated
Horseshoers' Course (Fall).....	19
Motor Mechanics Course (Fall).....	6
Saddlers' Course (Fall).....	15
Communications Course, Regular Army & National Guard (Spring)..	59
Battery Mechanics' Course (Spring)..	2
Saddlers' Course (Spring).....	1
Horseshoers' Course (Spring).....	3
Total.....	105

The Coast Artillery School, located at Fort Monroe, Virginia, conducts courses designed to keep personnel of the Corps abreast with the latest developments in tactics and technique of all types of fixed, railway, tractor-drawn, and anti-aircraft artillery. A total of 97 officers and 77 enlisted men were graduated from courses held during the school year 1930-31.

ENGINEERING AND SIGNALING

The Engineer School, located at Fort Humphreys, Virginia, is established for the purpose of developing and standardizing the instruction and training of engineer officers in the technique and tactics of the engineer arm so as to ensure efficient commanders and staff officers; to train engineer officers for duty in the Militia Bureau with the National Guard, the Organized Reserves, and the R.O.T.C., and for civil duties with which the Corps is charged; to instruct and train engineer officers of the National Guard and of the Officers' Reserve Corps; to prepare and revise engineer training regulations and manuals; to make research in matters pertaining to duties of the Corps; to disseminate engineer training principles throughout the service, where applicable; and to give special training to selected enlisted men. The Engineer School maintains an extensive library, the main portion of which is located at the Army War College in Washington, with branches at Fort Humphreys and in the Office, Chief of Engineers. The following courses were conducted in the school year 1930-31: Company Officers' Course, 17 graduates; National Guard and Reserve Officers' Course, 27 graduates; Enlisted Specialists' Course, 42 graduates. Five officers

pursued engineering courses at Cornell University; three, at Massachusetts Institute of Technology; five, at the University of California; one, at Iowa State University; one, at the California Institute of Technology; and one, at Rensselaer Polytechnic Institute (postgraduate). Two officers of the Corps attended Oxford University, England (Rhodes Scholarship); one attended *l'École Nationale des Ponts et Chaussées*, Paris, France (Institute of International Education Fellowship); and one officer made a study of European hydraulic research methods under a John R. Freeman travelling scholarship. At the end of the fiscal year, total enrollments in Engineer units of the Reserve Officers' Training Corps amounted to 5,442, of whom 20.3 per cent were in the advanced courses.

The Signal School, located at Fort Monmouth, New Jersey, graduated 42 officers from the Company officers' course. Of these, 10 were from the Signal Corps; 24 from the Infantry; three from the Cavalry; two from the Field Artillery; one from the Coast Artillery Corps; and two from the Marine Corps. Eleven National Guard officers, and five officers from the Signal Reserve Corps were graduated from a special three months' course. The officers' courses covered the theory and operation of modern electrical communication equipment together with their coordination and application for military purposes. In the enlisted specialists' school, 162 enlisted men of all combat arms were graduated. In addition, 52 enlisted men were taught to be expert telegraph, telephone, and radio operators, and to be proficient in the management of signal communication stations. The normal course is nine months in length.

FINANCE AND ACCOUNTING

The Finance School, U. S. Army, located in Washington, is divided into two departments, (a) Department of Finance and Accounting and (b) Department of Property Accounting and Property Auditing. The school con-

MILITARY EDUCATION

ducts courses for both officers and enlisted men, and its personnel at present consists of one officer, two warrant officers, and ten enlisted men. There were graduated 44 students last year, making a total of 721 graduates since the establishment of the school in 1920.

MEDICAL DEPARTMENT

The Army Medical School, located in Washington, conducts basic and advanced courses for officers and courses for enlisted specialists. The Medical Field Service School at Carlisle Barracks, Pa., serves as the tactical school for the Medical Department. The Army Dental School in Washington, trains officers in professional and technical subjects pertaining to the dental service of the Medical Department. The Army School of Nursing conducts a three-year course in nursing at Walter Reed General Hospital, Washington. The Army Veterinary School at Washington trains officers for professional and technical duties incidental to veterinary work in the Medical Department. The School of Aviation Medicine, at Brooks Field, Texas, trains officers to qualify as flight surgeons.

The following personnel graduated from the schools of the Medical Department during the school year 1930-1931: Army Medical School: basic course, 47 officers; advanced course, 6 officers; X-ray technicians' course, 24 enlisted men. Army Dental School: basic course, 8 officers; advanced course, 1 officer; dental mechanics' course, 14 enlisted men. Army Veterinary School: basic course, 9 officers; veterinary technicians' course, 11 enlisted men. Medical Field Service School: basic course, 70 officers; advanced course, 8 officers; Field Officers' course for the Organized Reserve and National Guard, 11 officers; Noncommissioned Officers' course for Regular Army and National Guard, 59 enlisted men. School of Aviation Medicine: three courses for Regular Army, 5 officers; three courses for the Organized Reserve, 27 officers; National Guard, 3 officers. The Army School of Nursing graduated 45 students.

ORDNANCE SCHOOLS

Watertown Arsenal.—Junior Ordnance officers are given a two-year course at the Ordnance School. The first year's work is given at the Massachusetts Institute of Technology and is a course in advanced mechanical engineering with especial reference to the design of Ordnance material. During the school year 1930-31, ten officers completed this course. The second year's work, at Watertown Arsenal, covers such subjects as metallurgy, foundry and machine shop practice and the duties of Ordnance officers with combat units. Ten officers completed this course and eight officers (including one from the Cuban Army), who successfully completed both courses, were graduated from this school.

The Ordnance Field Service School at Raritan Arsenal, New Jersey, trains Ordnance personnel in the various trades pertaining to Ordnance Supply and maintenance and in the construction and operation of Ordnance equipment issued to the Army. During the school year 1930-31, ten Ordnance School student officers, two Field Artillery officers, three Navy officers, one Ordnance Department civilian employee, and 170 enlisted men attended the regular courses at this school. One hundred and twenty-one of the men were enrolled in the various specialists' courses, designed to train enlisted men as armorers, blacksmiths, clerks, electricians, equipment repair men, machinists, artillery mechanics, auto mechanics, munitions workers and welders.

Civilian Educational Institutions.—Three officers of the Ordnance Department graduated during the year from the Harvard School of Business Administration, and two graduated from a special 2-year course at Stanford University, which closely parallels the instruction given at the Ordnance School.

CHEMICAL WARFARE INSTRUCTION

The Chemical Warfare School, located at Edgewood Arsenal, Maryland, offers courses annually to officers

IX. DEFENSE AND ARMAMENTS

of the Army and of the Navy. The attendance during the school year 1930-31 at these various courses was: Third Field Officers' Course, 51; Fourth Unit Gas Officers' Course, 29; Fourteenth Line and Staff Officers' Course, 37; Navy Ordnance Post Graduate Course, 27. In addition to the above listed graduates of the Chemical Warfare School, 12 officers attended the National Guard and Reserve Officers' Class, and 53, the Regular Course, both conducted at the Tank School, Fort George G. Meade, Maryland. The aim of all instruction is to keep abreast with every new development pertaining to chemical warfare tactics.

QUARTERMASTER SCHOOLS

During the year, approximately 10 per cent of the officers of the Quartermaster Corps were students at various military schools, including the Army War College, Command and General Staff School, Army Industrial College, the several Quartermaster Schools, Harvard School of Business Administration, University of Michigan, Carnegie Institute of Technology, American Institute of Banking, and at several Navy Yards.

The Quartermaster School at Philadelphia graduated 46 Regular Army officers, 14 National Guard and Reserve officers and 42 Warrant officers and Noncommissioned officers in 1931. The purpose of this school is instruction in administration, supply, transportation, construction, remount service, business management, mobilization plans, military organization, logistics, and field exercises. Three courses are given: Quartermaster Officers' (10 months), National Guard and Reserve Officers' (10 weeks), Warrant and Noncommissioned Officers' (9 months).

The Subsistence School at Chicago conducts a nine month course in the origin, production, manufacture, procurement, inspection, shipment, storage, preservation, sale, issue and accounting for subsistence supplies and forage, and nutrition and messing of troops. The course of instruction is arranged so as to give the students a comprehensive knowledge

of foods whereby they may become food specialists, qualified for duty throughout the military service. The annual program is made up of sixteen separate and distinct courses of varying length and each course includes study of one or more foods of the same general type. At intervals during the school year, technical and business experts deliver lectures to these classes, thereby bringing the best modern business practices to the attention of the students. To date, the school has issued 51 food bulletins which are of value to the commercial world as well as to the Army. During 1931, graduates from the Subsistence School included 6 Quartermaster officers, 2 officers from other arms, 3 Navy officers, and 1 Marine Corps officer.

The Motor Transport School at Camp Holabird, Md., conducts two nine month courses; one for officers and one for enlisted men. The officers' course consists of (a) thorough training in the fundamentals of the operations of motor transportation to include (1) operation in military organizations, both territorial and tactical, including subjects in military organization, in the tactics and technique of the separate arms and services, and the large military units; (2) operation in correlation with other forms of transportation: (b) thorough training in motor vehicle maintenance. Instruction consists of lectures, demonstrations, problems, and work in the various shop departments of the Motor Transport School, and includes courses in automotive mechanics, ignition, carburetion, engine design, engine testing, chassis repair, trouble shooting, mechanical drafting, eleven allied trade departments, inspection and maintenance as applied to all motor transport units, and administration and operation of motor transport organizations and their employment with and relation to other forms of transportation. From the officers' course, 15 Quartermaster officers, 7 line officers, and 3 Marine Corps officers were graduated in 1931.

The enlisted men's course provides thorough training in the repair and

upkeep of motor vehicles and their component parts. Enlisted men are developed: as instructors, in their respective units, in the theory and practice of operation, maintenance and tactical employment of motor transportation; as specialists in one or more of the trades allied with the maintenance of motor transportation; and as foremen in the repair and maintenance of motor transportation of all types. In the school year 1930-31 there were graduated 46 enlisted men of the Quartermaster Corps and 98 enlisted men of other arms and services.

Schools for Bakers and Cooks, twelve in number, are scattered throughout the corps areas and departments. Approximately 700 officers and 1700 enlisted men from all the Army components have completed the theoretical and practical courses of these schools.

Instruction of Reserve Officers in the Army and Service Assignment Group reached approximately 300 Reservists, while about 1,442 Quartermaster Reserve officers of both the Army and Service and Corps Area Assignment Groups were given correspondence courses, prepared under the direction of the Quartermaster General.

AVIATION

The Air Corps Primary Flying School, Brooks Field, Tex., graduated 37 Regular Army officers while the Primary course at March Field, Calif., graduated eighteen.

The Air Corps Tactical School, Maxwell Field, Ala., graduated 39 students this year, 24 from the Air Corps, 10 from other arms of the service, 3 from the Marine Corps, and 2 foreign officers.

The Air Corps Technical School, Chanute Field, Ill., graduated 74 Regular Army officers, divided, 29 in armament, 10 in communications, 30 in maintenance and engineering, and 5 in photography courses. Seven National Guard officers also completed work in this school.

The Air Corps Engineering School, Wright Field, Ohio, gradu-

ated 16 Regular Army officers in the higher phases of air engineering.

The Air Corps Advanced Flying School, Kelley Field, Tex., graduated 51 Regular Army officers.

GENERAL SERVICE SCHOOLS

The Command and General Staff School, Fort Leavenworth, Kan., which graduated 127 student officers in 1931, conducts a 2-year course thoroughly grounding selected officers in the principles of the command, staff, tactics, and logistics of large tactical units.

The Army War College, Washington, extends the instruction received at Leavenworth to the subjects of mobilization, supply, and military operations on a large scale. From the War College there were graduated in 1931 a total of 82 officers; 74 from the Army, 5 from the Navy, and 3 from the Marine Corps.

The Army Industrial College, Washington, trains Army officers for duties pertaining to the supervision and procurement of military supplies and of assurance of adequate provision for industrial mobilization in a national emergency. This work is confined to instruction in matters of general policy and the broader aspects of procurement activity. In the 1930-31 course, 46 officers were graduated, this number included 1 Marine Corps and 4 Navy officers.

RESERVE OFFICERS' TRAINING CORPS

Enrolment.—At the close of the school year 1931 there were 117,423 students enrolled in the Reserve Officers' Training Corps. These were divided among 326 units scattered throughout the States, the District of Columbia, Porto Rico, and Hawaii. There were 220 senior units with an enrollment of 75,786, and 106 junior units with an enrollment of 41,637. To accomplish the work incident to the annual training of the Corps, 800 commissioned officers, 18 warrant officers, and 935 enlisted men of the Regular Army were detailed. There were in attendance at the summer training camps for the basic course

576, and for the advanced course 6,194. At the close of the school year 1930-31, there were 55 preparatory schools, including high schools, which had received Government aid. Army personnel, when available, served as instructors and a limited amount of equipment was loaned to these schools for instructional purposes. Enrollment in the second-year advanced course totaled 5,927 and 5,151 commissions as lieutenants in the Officers' Reserve Corps were offered to graduates. In addition, 833 certificates were granted to those eligible for appointment but who had not yet reached the age of 21 or who did not desire appointment at the

time. Those appointed as lieutenants or granted certificates include, in addition to college and university students, graduates of essentially military institutions which do not confer degrees.

Citizens' Military Training Camps.—For the fiscal year 1931, applications to the number of 66,090 were received. Of 43,042 applicants ordered to report to camps (53 in number), 40,564 reported, 39,061 enrolled, and 37,649 completed the training, of whom, 2,037 graduated from the blue course. Of those graduating from the blue course, 114 were appointed second lieutenants in the Reserve Corps.

ADMINISTRATION OF VETERANS' AFFAIRS

BY FRANK T. HINES

BRIGADIER GENERAL U. S. A.; ADMINISTRATOR OF VETERANS' AFFAIRS

ORGANIZATION

Consolidation.—Public No. 536 (71st Congress), approved July 3, 1930, authorized the President by executive order to consolidate and co-ordinate governmental agencies affecting war veterans into an establishment to be known as the Veterans' Administration. The President, as of July 21, 1930, issued an executive order authorizing the consolidation of the United States Veterans' Bureau, the National Home for Disabled Volunteer Soldiers, and the Bureau of Pensions. The several agencies continued to operate as bureaus of the Veterans' Administration until July 1, 1931, when a new plan of organization became effective which redistributed the several functional activities of the three then existing agencies to the end that related activities were set up under a common jurisdiction, and these closely related services were grouped under the supervision of an assistant administrator.

Departments.—Under the above plan of organization, there are five major units, namely, (a) office of the administrator; (b) office of the as-

sistant administrator in charge of medical and domiciliary care, construction and supplies; (c) office of the assistant administrator in charge of pensions and compensation; (d) office of the assistant administrator in charge of finance and insurance; and (e) office of the special counsel on insurance claims.

Regional Facilities.—The Veterans' Administration maintains regional office facilities at 54 locations throughout the United States. These offices are responsible for the preparation and adjudication of claims for compensation and disability allowance; the physical examination of veterans of all wars applying for benefits; provision of medical, surgical, and dental treatment, including hospitalization; certification as to legality of appointment and fitness of fiduciaries as well as other matters affecting beneficiaries under legal disabilities; and the handling of insurance activities and matters pertaining to loans on adjusted service certificates. They also assist in the preparation of claims for pensions, and in

ADMINISTRATION OF VETERANS' AFFAIRS

the admission of beneficiaries to Veterans' Administration homes.

Scope of Service.—Under the consolidated plan of veterans' relief the scope of the present Veterans' Administration can best be illustrated by the number of veterans or their dependents who are at this time receiving direct financial benefits at the hands of the government. As of June 30, 1931, exclusive of the benefits of insurance, adjusted compensation, hospital or domiciliary care and civil service retirement, there were on the rolls of the Veterans' Administration 1,349,812 beneficiaries as follows:

Class of Service	Total Veterans and Dependents of Deceased or Living Veterans
War of 1812.....	8
Mexican War.....	547
Indian Wars.....	9,753
Civil War.....	193,721
War with Spain.....	239,860
Regular Establishment.....	22,571
World War.....	883,352

DISABILITY AND RETIREMENT

Allowance.—The amendment to the World War Veterans' Act approved July 3, 1930 authorized the payment of a disability allowance to any honorably discharged veteran who entered the service prior to November 11, 1918, and served 90 days or more during the World War, and who is suffering from a 25 per cent or more permanent disability not the result of his own willful misconduct, which was not acquired in service during the World War and for which compensation is not payable. Through June 30, 1931, a total of 541,943 applications had been filed, of which number 448,441 had been adjudicated. Of the total claims adjudicated, 239,073 were allowed. The active awards on June 30, 1931, totaled 229,568, while the disbursements for such purposes during the fiscal year approximated \$29,700,000.

Compensation.—During the fiscal year 1931, payments of compensation to disabled veterans of the World War and to the widows, children, and dependent parents of deceased veterans of that war totaled approximately \$213,423,000. This is an increase of

approximately \$25,391,000 over the amount disbursed during the fiscal year 1930. These payments were made to veterans whose disabilities were directly or presumptively connected with service and to the dependents of deceased veterans who died as a result of disabilities or injuries incurred in service. At the close of the fiscal year there were 299,288 veterans receiving disability compensation. As of the same date death compensation was being paid to the dependents of 93,334 deceased veterans.

Retirement of World War Emergency Officers.—Applications for retirement under the Act of May 24, 1928, have been filed by 13,924 officers. As of June 30, 1931, retirement with pay had been awarded to 6,773 officers. Payments in the amount of \$11,000,000 were made for this type of benefit during the fiscal year 1931.

Civil Service Retirement.—As of June 30, 1931, there were 22,650 annuitants on the rolls as compared to 17,768 at the close of the fiscal year 1930. Of those on the rolls at the close of this year 15,357 were retired for age, 4,947 for disability, 1,374 on account of involuntary separation, and 972 as a result of 30 years' service. The annual value of the retirement roll as of June 30, 1931 was \$21,563,026.50. The highest annuity paid during this year was \$1,285.92 and the lowest \$81.

PENSIONS

Pensioners.—The following summarization shows the number of pensioners on the rolls of the Veterans' Administration as of June 30, 1931, subdivided by type of beneficiary and class of service:

Class of Service	Soldiers	Nurses	Widows and Other Dependents
War of 1812.....	....	....	8
Mexican War.....	....	....	547
Indian Wars... 5,360	....	....	4,302
Civil War.... 39,426	23	....	153,437
War with Spain 193,286	506	....	33,437
Regular Establishment.... 16,920	....	....	4,128
World War.... 41	....	....	12

Disbursement for all pensions was made in the amount of \$234,419,721

IX. DEFENSE AND ARMAMENTS

during the fiscal year 1931. This amount represents an increase of \$15,216,180 over the disbursement made during the fiscal year 1930.

INSURANCE

Term and Automatic.—As of June 30, 1931, monthly installments of term insurance were being paid to 11,862 permanently and totally disabled and to the beneficiaries of 134,537 deceased veterans of the World War. At the close of this year the aggregate value of the policies held by veterans was \$95,583,000 and by beneficiaries \$1,174,300,000, while the average monthly installment was \$49.88. The beneficiaries receiving monthly payments consisted of 83,383 parents, 27,997 sisters and brothers, 20,057 widows, 2,103 children, and 997 aunts, uncles, nieces and nephews.

Converted Claims.—As of June 30, 1931, a total of 16,786 awards had been made on account of death and 6,424 by reason of permanent and total disability. These death awards involved the payment of insurance in the amount of \$89,855,000. Of this sum \$70,836,515 was disbursed in lump-sum payments to 13,293 beneficiaries. Payments of installments were completed in 1,455 cases in which the veteran was deceased, leaving 2,016 cases on which payment is still being made. Payments of converted insurance, averaging \$33.69 monthly, are being made to 6,009 permanently and totally disabled veterans. At the close of the fiscal year there were 645,964 Government Life (converted) insurance policies in force, in the amount of \$3,023,938,351.

ADJUSTED COMPENSATION

Loans.—The amendment to the World War Adjusted Compensation Act effective Feb. 27, 1931, provides that the loan basis of adjusted service certificates shall at no time be less than 50 per cent of the face value of the certificate and the rate of interest on any loan made after the effective date of this amendment shall not exceed 4½ per cent compounded annually. The effect of this amendatory legislation is illustrated by the

following: from July 1, 1930, to the effective date of the amendment, 867,741 loans were made having a face value of \$71,415,403.25; during the remaining four months of the fiscal year, 2,063,578 loans were made having a value of \$795,569,519.73, making a total of \$866,984,922.98 loaned direct to veterans during the fiscal year 1931. The loans outstanding as of June 30, 1931 amounted to \$1,087,195,525 and were made to 2,265,345 veterans.

Claims filed for benefits under the World War Adjusted Compensation Act to June 30, 1931 totaled 3,828,146, of which 3,790,811 to the value of \$3,607,007,836 had been approved.

EMPLOYMENT

The Veterans' Administration has long considered it to be a responsibility of the Government to aid in every possible way the securing of employment for veterans and much has been accomplished by the Department of Labor through the United States Employment Service in aiding veterans seeking employment. For the fiscal year 1931, \$100,000 was made available to the Department of Labor for the establishment of offices to secure employment for veterans, which represents an increase of \$77,000 over the amount available for this purpose last year. At the close of this year there were 23 of these offices in operation in the principal cities throughout the country. Regional and other field offices of the Veterans' Administration have been instructed to cooperate fully with the Department of Labor in its employment activities, and in case the latter agency does not have an employment office in the city in which the former is located, to utilize their own personnel in aiding in this particular work.

DOMICILIARY CARE

At the close of the fiscal year 1931, the ex-service population present in the Veterans' Administration homes totaled 19,264. Of this total 12,204 were in barracks and 7,060 in hospital facilities. The total number cared for during the fiscal year was 63,879,

ADMINISTRATION OF VETERANS' AFFAIRS

an increase of 2,975 over the fiscal year 1930.

GUARDIANSHIP

As of June 30, 1931, there were 27,802 incompetent and 40,525 minor beneficiaries under guardianship, or a total of 68,327. There was an increase of 7,369 during the fiscal year, almost double the prior normal increase, due largely to the disability allowance provision of the act of July 3, 1930, the increase in incompetents being both numerically and proportionately larger than that of minors for the first time. Guardians' accounts were secured and disposed of as follows: approved 57,629; disapproved 1,836; pending 6,355; total 65,820.

HOSPITALIZATION

Patients.—As of June 30, 1931, there were 35,139 patients remaining

under treatment and observation in all hospitals, whose admission had been authorized under authority contained in the World War Veterans Act of 1924 as amended. This represents an increase of 4,598 over the number remaining as of June 30, 1930.

Admissions.—Since 1919, when hospital care and treatment was first authorized, there have been 992,236 admissions to hospitals, of which 109,649 were made during the present year. The latter figure represents an increase of 17,534 over the admissions during the fiscal year 1930. Patients admitted to the hospital for the first time during this year numbered 60,687 or 55% of the total admissions. The following table shows the admissions of Veterans' Administration patients to all hospitals, by branch of service and type of patient, during the fiscal year 1931:

Branch of Service ¹	Total	Pulmonary Tuber- culosis	Psychotic	Other Neuro- psychiatric	General Medical & Surgical
U. S. Veterans.....	53,601	7,800	4,626	5,793	35,382
National Homes.....	5,293	784	406	453	3,650
U. S. Marine.....	7,966	245	49	548	7,124
U. S. Army.....	12,093	995	199	820	10,079
U. S. Navy.....	25,490	754	365	2,564	21,807
U. S. Interior.....	79	....	34	2	43
State Institutions.....	301	2	209	38	52
Civil Institutions.....	4,826	605	235	324	3,662
Total².....	109,649	11,185	6,123	10,542	81,799

¹ Branch of service refers to the type of hospital.

² Admissions of 460 allied veterans and 326 miscellaneous beneficiaries not included.

Hospital Capacity.—The following table shows the hospitals under the supervision of the Veterans' Administration by location and standard bed capacity, as of June 30, 1931:

Alexandria, La.....	421	Jefferson Barracks, Mo.....	372
American Lake, Wash.....	512	Kansas City, Mo.....	200
Aspinwall, Pa.....	226	Knoxville, Iowa.....	851
Atlanta, Ga.....	200	Lake City, Fla.....	307
Augusta, Ga.....	683	Legion, Tex.....	433
Bedford, Mass.....	644	Lexington, Ky.....	250
Boise, Idaho.....	235	Lincoln, Neb.....	197
Bronx, N. Y.....	950	Livermore, Calif.....	318
Camp Custer, Mich.....	774	Lyons, N. J.....	430
Castle Point, N. Y.....	425	Marion, Ind.....	1,400
Chillicothe, Ohio.....	614	Memphis, Tenn.....	360
Coatesville, Pa.....	483	Minneapolis, Minn.....	562
Dwight, Ill.....	225	Muskogee, Okla.....	400
Edw. Hines, Jr., Hines, Ill.....	1,655	Newington, Conn.....	249
Excelsior Springs, Mo.....	290	Northampton, Mass.....	555
Fargo, N. D.....	57	North Chicago, Ill.....	1,135
Ft. Bayard, N. M.....	450	North Little Rock, Ark.....	750
Ft. Harrison, Mont.....	306	Northport, L. I., N. Y.....	1,392
Ft. Lyon, Colo.....	638	Oteen, N. C.....	612
Gulfport, Miss.....	425	Outwood, Ky.....	375
		Palo Alto, Calif.....	1,010
		Perry Point, Md.....	1,015
		Philadelphia, Pa.....	416
		Portland, Ore.....	337
		Rutland Heights, Mass.....	420
		St. Cloud, Minn.....	494
		San Fernando, Calif.....	230

IX. DEFENSE AND ARMAMENTS

Sheridan, Wyo.	438
Sunmount, N. Y.	380
Tucson, Ariz.	261
Tuskegee, Ala.	747
Walla Walla, Wash.	355
Washington, D. C.	260
Waukesha, Wis.	250
Whipple, Ariz.	600
Total.....	28,574

FINANCE

Disbursements.—The actual net disbursements for all purposes (including adjustments on lapsed appropriations) for activities under the jurisdiction of the Veterans' Administration during the fiscal year ended June 30, 1931, aggregated \$785,813,713.98. Of this amount, \$511,678,902.30 was disbursed from appropriations made for the support of the activities of the former Veterans' Bureau; \$260,-

673,873.30 from appropriations of the former Pension Bureau; and \$13,460,-938.38 from appropriations of the former National Home for Disabled Volunteer Soldiers. The disbursement from Pension Bureau appropriations included approximately \$24,500,000 for the payment of annuities and refunds under the civil service retirement law, and approximately \$102,000 for salaries and expenses in connection with the administration of this activity. The total disbursement as of June 30, 1931, on behalf of and incidental to the relief of veterans was approximately \$14,530,000,000. This amount is exclusive of the amount disbursed in connection with civil service retirement.

WATERWAYS AND HARBORS

By LYTLE BROWN

MAJOR GENERAL U. S. A.; CHIEF OF ENGINEERS, WAR DEPARTMENT

INLAND WATERWAYS

Location and Description.—The principal systems are the Great Lakes, together with the New York State Barge Canal and the Hudson River; the Mississippi system, including the Mississippi, the Missouri, the Ohio, the Illinois to Chicago, and their important tributaries; the rivers of the Atlantic Coast and the intracoastal waterways connecting them; the rivers of the Gulf Coast, and the intracoastal waterway system extending from Pensacola via New Orleans down the Texas coast to Corpus Christi, and connecting with the numerous southern Louisiana waterways and with the Mississippi system; the San Joaquin-Sacramento system in California; the Columbia system in the northwest; and the smaller Pacific Coast rivers. These are improved over stretches and to depths commensurate with their commercial importance and with the benefits derived from them.

Channel Depths.—The Great Lakes, which are really inland seas, have connecting channels from Supe-

rior to Erie at least 21 feet deep at standard low water. The River and Harbor Act of July 3, 1930, provides that these depths are to be increased to provide for the passage of vessels of 24-foot draft. The most important harbors have depths equal to existing channel depths. The Barge Canal, which the Secretary of War was authorized and empowered to take over from the State of New York, and the intracoastal system from Trenton, N. J., to Wilmington, N. C., have depths of 12 feet. The Mississippi has a 9-foot depth to St. Louis and 6 feet to St. Paul. The River and Harbor Act of July 3, 1930, authorizes the construction of a channel with 9-foot depth to Minneapolis. The Ohio now has a 9-foot channel throughout its length, with 6 to 9 feet on its main tributaries. The Missouri is being improved to afford a channel having 6-foot depth from its mouth to Sioux City. The Sacramento has a 10-foot project. Included in the intracoastal waterways is a channel which, when completed, will provide 6-foot depth

across southern Florida via St. Luce River, Lake Okeechobee and Caloosahatchee River. Various other rivers and waterways have depths ranging from 7 feet or more to 3 or 4 feet. Others, whose commercial importance is not so great, have been improved simply by the removal of snags and other obstructions. The project depths mentioned above are the depths toward which the War Department is working. They have not yet been attained in all cases, due to limitations as to time and the availability of funds. However, work is progressing as rapidly as funds will permit.

Status of Water Transportation.

—Inland waterway transportation, after a widespread decline coincident with the extensive development of railroad facilities throughout the country has, in the past ten or fifteen years, shown a pronounced increase. Particularly is this true during late years, which have witnessed a great increase in the business handled on inland waterways and in the domestic trade of our ocean ports. The pronounced trend toward a more extensive use of waterways is due to a number of causes. Among these is the realization that under suitable conditions as to character of traffic, origin and destination with respect to waterways, suitable channels, and modern carriers and terminals, water transportation is inherently cheaper than any other form. The increases in railroad rates have imposed a heavy burden upon the lower classes of traffic, which has made imperative the demand for more economical transportation. Waterways are particularly valuable in the handling of raw products and low grade commodities for which the economic necessities of the country demand lower transportation costs than railroads can afford. There is a growing realization that the three means of internal traffic, *viz.*, railroads, waterways and highways, are properly cooperative rather than competitive, and that the development of each of them is not only of benefit to the public at large but also to all transportation agencies con-

cerned, thus requiring cooperation of the railroads in the establishment of equitable joint rates. There is also a distinct tendency toward providing modern and efficient carriers, terminals and trans-shipment facilities. In no section of the country is this more evident than in the Mississippi Valley. The Inland Waterways Corporation operates a barge line on the Mississippi to St. Paul and Minneapolis, and numerous private and contract carriers afford service over this route. On the upper sections of the Ohio system there has long been intensive traffic, such as the coal movements on the Monongahela, Allegheny and Kanawha and the Ohio itself. Since the completion of improvements which provide 9-foot navigation throughout the year from Pittsburgh to New Orleans, large sums have been expended for the construction of modern floating plant and port facilities, and the tonnage transported is rapidly increasing. There is also a growing demand for the establishment of additional efficient common carrier service on the Mississippi and its tributaries, as well as on numerous other important waterways throughout the country. The importance of our national waterways system, the need of completing it and of intensively developing its traffic, and the proper cooperative relation between railways and waterways, are appreciated by far-seeing public men.

Inland Waterways Corporation was created June 3, 1924, by an act of Congress. It represents a re-organization of the Federal Barge Line created during the war, and in its present form is a corporation functioning like any other but controlled by the Government through the Secretary of War. The present chairman and executive officer is Major General T. Q. Ashburn. It has for some time been operating a fleet of modern barges and towboats on the Mississippi River from Minneapolis to New Orleans, thence via connecting waterways to Mobile, and thence up the Warrior system to Birmingham. In 1931 operations were extended to Peoria, on the Illinois River, and they will prob-

IX. DEFENSE AND ARMAMENTS

ably be extended to Chicago and Kansas City during 1932. These were the only extensions contemplated at the time the act was passed, and the law specifically prevents operations upon the Ohio River. The barge line handles all kinds of freight—low, medium and high grade. During the calendar year 1930, it transported 1,490,624 tons of commerce, of which 1,255,358 tons pertained to the Mississippi Division and 235,266 tons to the Warrior Division. A total of 66,147 tons of commerce was interchanged between the respective divisions, hence the net total of the commerce carried by the corporation on all divisions was 1,424,147 tons.

NEW WATERWAY PROJECTS

Great Lakes.—By the River and Harbor Act approved July 3, 1930, Congress adopted a total of 174 projects for waterway and harbor improvements in the United States. Eighty-five of these were for the improvement of rivers and canals, and 89 were for improvement of ports and harbors. Included are 17 projects for improvement of harbors and 4 for rivers and connecting channels of the Great Lakes system. These include both new and the extension of existing projects. The deepening of the channels of the Great Lakes to afford vessel drafts of 24 feet at low water datum for downbound vessels was actively commenced during the fiscal year 1931, by placing under contract practically all work required in the channels between Lake Superior and Lakes Huron and Michigan. Under the River and Harbor Act, the Secretary of War was authorized to take over and operate the Oswego and Erie Canals from the State of New York. These are to be kept and maintained as barge canals only, and at present depths. Highly satisfactory progress has been made on the project for the comprehensive improvement of the harbor at Oswego.

Intracoastal Waterways.—Further improvement was authorized on the intracoastal waterways, in the projects for extending the Atlantic intracoastal waterway from the Cape

Fear River to Winyah Bay and the extension of the intracoastal waterway from Pensacola Bay, Florida, to Mobile, Alabama. Improvements were authorized to Gulf ports and the work is actively in progress on the intracoastal waterway from the Mississippi River at New Orleans to Corpus Christi, in the sections in Louisiana, as well as the extension of the waterway eastward from Mobile to Pensacola.

Mississippi System.—The Mississippi project has been increased to provide 9-foot navigation from New Orleans to St. Paul and Minneapolis. The Tennessee River is to be improved so as to provide 9-foot navigation, and the Illinois waterway is to be completed to provide the last link in the Lakes to the Gulf waterway between the Mississippi and Lake Michigan. Improvement of the Missouri River to secure a navigation channel 6 feet deep to Kansas City has been vigorously prosecuted. On the Illinois River work is actively in progress on locks and other works included in the State project for the Illinois waterway. On the upper Mississippi River, the work has been initiated at Rock Island Rapids, the dam at Hastings placed in operation, the restoration of the Twin City lock accomplished with a second lock under way, and plans prepared for undertaking other locks and dams.

PORTS

Ocean Port Depths.—The maximum depth that has been provided in harbor channels is 40 feet at mean low water, except in the channel through the outer bar of San Francisco, where a depth of 45 feet has been authorized to afford safe navigation to keep draft vessels in the heavy swells there encountered. The depth of 40 feet has been afforded at New York Harbor and at other ports of primary importance to the Navy. While more than 90 per cent of the world's shipping draws less than 30 feet, yet to afford full, free and unimpeded navigation, a depth of 35 feet is provided at the principal harbors, and it may be said that for a port engaged in ocean ship-

WATERWAYS AND HARBORS

ping such depth is advisable when it can be provided at a cost commensurate with the volume of commerce.

New Port Projects.—The River and Harbor Act of July 3, 1930, provided for the adoption of 89 projects for port improvements in the United States. Included in this number are new projects and extensions of those existing prior to passage of the Act. Construction of a 40-foot channel at Newport News, a 26-foot channel to Stockton, Calif., and the maintenance and extension of existing channel depths in existing projects has been initiated and carried on throughout the year. During the fiscal year 1931, 32 reports on proposed port projects were submitted by the War Department to Congress. Of these 5 were favorable and 27 were unfavorable.

Port Facilities.—Plans of the Port of New York Authority, approved by Congress, provide for comprehensive coordination of rail and water facilities. Three belt line railroads are to be constructed which will provide connections between all railroads entering the area and the port terminals. The plan provides for a tunnel under the upper bay to connect the west and east sides of the harbor. During the construction period the Port Authority proposes the establishment of an organized motor transportation service to connect railroad and marine terminals. Port Newark, now an ocean terminal, has increased the facilities available to New York harbor. Additional facilities will be provided

when the terminals at Jamaica Bay are completed. At Philadelphia, large modern piers and wharves have been constructed. Rail connections to these are such that cargo may be transferred direct between ships and railroad cars. These piers are provided with excellent transit sheds and storage facilities. New grain elevators and modern coal loading piers have recently been constructed here. Wilmington, Del., has a modern terminal with space for several ships. Extensive improvements have been made at Miami, Mobile and Houston; the last port, constructed at the head of an artificial channel, handles a large tonnage of oil, cotton and general cargo. Improvements to port facilities are general along the entire Pacific Coast, particularly at Los Angeles, which handles a large tonnage. San Francisco, Portland and Seattle have also made extensive improvements and extensions to their marine terminals. Improvements have also been effected at Portland, Me., Boston, Baltimore, Charleston, S. C., Jacksonville, Tampa, San Diego, Richmond, Calif., and at Tacoma.

INLAND WATERWAY COMMERCE

Inland Waterways Improved by the Government.—The following shows freight traffic for 1930 of waterways under improvement by the Federal Government, excluding short deep stretches of rivers (like the lower Hudson and Delaware), which are really approaches to ports.

Waterways	Short Tons	Value
Hudson R., middle stretch.....	6,796,896	\$ 72,432,024
Hudson R., upper stretch.....	1,577,232	95,924,858
Delaware R., above Philadelphia.....	5,527,962	18,971,110
Chesapeake-Delaware Canal.....	867,715	50,540,060
Waterway from Norfolk, Va., to the Sounds, North Carolina...	131,099	1,723,518
Inland Waterway from Norfolk, Va., to Beaufort Inlet, N. C....	594,841	28,480,698
St. Johns R., above Jacksonville.....	181,333	11,610,645
All others, Atlantic Coast.....	14,804,797	532,414,605
Tombigbee-Warrior System.....	1,587,914	35,888,082
Southern Louisiana Waterways (excluding Mississippi River)...	5,620,196	126,012,531
All others, Gulf Coast.....	20,183,207	334,523,059
San Joaquin R.....	925,713	40,549,745
Sacramento R.....	1,980,373	55,481,982
Columbia R. and lower Willamette below Vancouver and Portland*	6,029,172	45,341,633

* Exclusive of ocean traffic.

IX. DEFENSE AND ARMAMENTS

	Waterways	Short Tons	Value
All others, Pacific Coast.....		13,915,376	\$ 127,165,274
Mississippi R. below Vicksburg (excluding ocean commerce)....		3,300,910	178,494,403
Mississippi R., Memphis-Vicksburg.....		2,377,568	166,833,104
Mississippi R., Cairo-Memphis.....		2,831,347	155,027,386
Mississippi R., Minneapolis to Ohio River (Cairo).....		1,395,855	72,005,350
Ohio River.....		22,337,434	188,244,870
Monongahela R.....		25,657,054	148,322,557
Allegheny R.....		3,418,158	13,026,604
Kanawha R.....		1,722,351	7,351,941
All others, Mississippi System.....		15,771,254	150,902,901
All others in United States.....		95,464,656	1,066,116,825
Total.....		255,000,413	\$3,723,385,765

Other Inland Waterways.—The following is for internal waterways | other than those under improvement by the Federal Government:

	Waterways	Short Tons	Value
New York State Barge Canal.....		3,605,457	\$ 202,508,108
Lehigh and Delaware Division Canals, Pa.....		192,926	1,032,125
Chicago Sanitary Drainage Canal.....		92,228	2,501,468
New Basin Canal, La.....		258,856	3,595,124
All others of record.....		843,854	52,568,018
Total.....		4,993,321	\$ 262,204,843
Total, corrected for duplications because of commerce moving over two or more waterways.....		226,760,000	\$3,557,000,000

GRAND TOTAL OF CORRECTED INTERNAL WATERWAY COM- MERCE

Year	Tonnage	Value
1921.....	116,300,000	\$2,443,500,000
1922.....	111,800,000	3,177,900,000
1923.....	153,700,000	2,960,200,000
1924.....	173,200,000	3,446,000,000
1925.....	204,569,010	3,950,450,000
1926.....	217,000,000	3,680,000,000
1927.....	219,000,000	3,930,000,000
1928.....	227,300,000	3,838,000,000
1929.....	245,894,000	3,871,800,000
1930.....	226,760,000	3,557,000,000

COASTWISE COMMERCE

Atlantic Coast Ports	Tonnage Both Ways	Value
Portland, Me.....	2,379,902	\$ 82,803,999
Boston, Mass.....	11,601,311	528,995,674
Providence, R. I.....	4,157,204	397,519,781
New York, N. Y.....	38,967,328	2,413,526,408
Philadelphia, Pa.....	16,231,397	656,017,051
Baltimore, Md.....	4,461,089	214,478,848
Norfolk-Newport News, Va.....	18,963,182	476,574,915
All others.....	26,721,787	1,335,241,611

Total, exclusive
of Porto Rico. 123,483,200 \$6,105,158,287

Gulf Coast Ports	Tonnage	Value
New Orleans, La..	3,741,053	\$ 156,746,307
Galveston, Houston and Texas City, Tex.....	12,317,975	455,482,178
The Sabine Ports, Tex.....	17,811,865	287,087,527
All others.....	8,213,896	249,382,134
Total.....	42,084,789	\$1,148,698,146

Pacific Coast Ports	Short Tons	Value
Los Angeles, Calif.	20,137,355	\$ 868,806,136
San Francisco Bay and Harbor, Calif.	20,021,009	1,203,332,616
Portland, Ore.....	3,684,848	227,440,905
Tacoma, Wash....	2,016,911	88,373,435
Seattle, Wash.....	5,234,816	408,499,261
All others.....	13,664,635	262,704,380
Total.....	65,659,574	\$3,059,156,733

Noncontiguous Ports	Short Tons	Value
Hawaii.....	3,337,987	\$274,602,231
Alaska.....	115,804	15,222,124
Porto Rico.....	960,937	103,121,644
Total.....	4,414,728	\$392,945,999

Grand Total Ports. 235,642,291 \$10,705,959,165
Total, corrected for
duplications of
receipts and ship-
ments..... 117,821,146 \$5,352,979,583

The intercoastal commerce through the Panama Canal is included in the above. The following gives the total traffic of the Canal in recent years:

COMMERCE THROUGH PANAMA CANAL (Short Tons)

Fiscal Years	Intercoastal	Total
1922.....	2,562,527	10,884,910
1923.....	8,068,553	19,567,875
1924.....	13,527,378	26,994,710
1925.....	9,496,259	23,958,836
1926.....	9,871,210	27,747,541
1927.....	11,365,592	31,078,000
1928.....	10,833,443	33,186,396
1929.....	11,084,212	34,342,565
1930.....	11,174,429	33,633,837
1931.....	9,862,020	28,092,706

FOREIGN AND DOMESTIC COMMERCE OF PORTS DURING THE CALENDAR YEAR 1930
(short tons)

Grand Divisions	FOREIGN		DOMESTIC		GRAND TOTAL
	Imports	Exports	Tons	Value	Tons Value
Atlantic Coast.....	37,661,764	\$2,658,469,467	15,957,016	\$2,467,521,519	295,919,073 \$18,530,028,633
Gulf coast.....	4,948,280	188,743,895	16,724,001	836,402,134	72,741,086 2,426,669,616
Pacific coast.....	3,837,558	596,762,058	15,466,917	514,715,631	118,409,000 4,994,873,587
Great Lakes.....	7,590,155	143,676,617	11,923,966	107,112,435	245,031,755 3,022,335,336
Grand total, unadjusted.....	54,037,757	3,587,452,037	60,071,900	3,925,751,719	732,100,944 28,973,907,172
Adjusted total, eliminating all known duplications.....	54,037,757	3,587,452,037	60,071,900	3,925,751,719	458,725,997 19,404,829,046

Commerce at other than Ports, 1930

Tons	Value
Adjusted Total.....	\$1,554,003 \$717,170,954

Total Commerce of the United States, 1930

Tons	Value
Adjusted Total.....	\$20,280,000 \$20,122,000,000

STUDY AND SURVEYS OF RIVERS

For the purpose of formulating plans and determining methods for the most practicable utilization and control, and coordination of plans for improvement and maximum utilization in the best interests of the public and private interests concerned, an extensive inventory of the potential resources of our principal rivers is now being made by the Engineer Department. The study as authorized by Congress in the River and Harbor Acts of 1925 and 1927 provided for the examination, in connection with the Federal Power Commission, of those navigable streams and tributaries on which power development appeared feasible. The Mississippi River Flood Control Act of May 15, 1928 directed speedy prosecution of these studies and surveys and also directed the preparation of plans for certain flood control projects on tributaries of the Mississippi. As a result of these studies, 83 reports were entirely completed up to June 30, 1931. When all studies have been completed, we will have an inventory of the possibilities of all of our more important rivers that are now navigable or may, by improvement, be made navigable.

NICARAGUAN CANAL SURVEY

Public Resolution No. 99, 70th Congress, approved March 2, 1929, authorized a survey for an Inter-oceanic Canal across the Republic of Nicaragua, under the direction of the Secretary of War and the supervision of the Chief of Engineers, with the aid of such civilian engineers as the President should deem advisable. President Hoover appointed the Inter-oceanic Canal Board and authorized sending a battalion of Engineer troops to Nicaragua to make the necessary investigations and surveys. On June 30, 1931, the Board consisted of Colonel Ernest Graves, retired, Chairman; Sydney B. Williamson, Dr. Anson Marston, R. G. Finch, and Lieutenant Colonel Dan I. Sultan, Corps of Engineers. The field survey has been made under the supervision of Lieutenant Colonel Dan I. Sultan, by a battalion of En-

IX. DEFENSE AND ARMAMENTS

gineer troops, and the operations included extending and checking the topographical surveys made thirty years ago, collecting additional hydrographic data, resurveying the harbors and making sub-surface explorations to ascertain the best alignment and location for structures for a canal of greatly increased dimensions as compared with those proposed in 1901. Preliminary plans and estimates are being made for a canal of suitable dimensions for the larger commercial vessels and increased traffic of today and that which may reasonably be anticipated in the future.

MISSISSIPPI RIVER FLOOD CONTROL

Three years after the approval of the law enacted by Congress for the flood control of the alluvial valley of the Mississippi River, finds dirt flying from Cape Girardeau, Missouri, the head of the Valley, to New Orleans. Of the \$325,000,000 authorized for the project nearly \$110,000,000 has been expended or obligated. The plan set forth in the adopted project proposes to protect the alluvial valley of the Mississippi, consisting of the St. Francis, the Yazoo, the Tensas (composed of the Boeuf and Macon Valley), and the Atchafalaya Basins, as well as the alluvial lands around Lake Pontchartrain, against the maximum flood predicted as possible. This is to be done by raising existing levees (with certain exceptions) about three feet and strengthening them greatly. North of the Arkansas River, floods will be confined generally to the main leveed channel but a limited area in the St. Francis Basin, in southeast Missouri and the City of Cairo, Ill., is to be given additional safety by a floodway between Birds Point and New Madrid, Missouri, which will, during extraordinary floods only, become an adjunct

of the main channel and thereby widen the river and hold down stages. South of the Arkansas River flood waters in excess of what the leveed channel of the main river will safely carry will find their way to the Gulf through the lowlands of the basins west of the river, which have always carried extraordinary flood waters. Protecting levees are to be constructed on the edges of these lowlands so as to restrain the waters within them and to protect the good lands outside. These protecting levees are to be located so as to reclaim the maximum amount of land that is economically justified, and where there are already such levees the project contemplates using the same levees but strengthening them. New Orleans is to be given additional protection by a controlled spillway at Bonnet Carre emptying into Lake Pontchartrain from the river above the city. During the last year about 89,000,000 cubic yards of earth were placed in the levees being constructed in accordance with the adopted plan. The total project requires the moving of something like five hundred million cubic yards of earth. This is over twice as much earth as was excavated in building the Panama Canal. In addition to the levee work, revetments are being constructed to prevent bank caving and to protect the levee lines as well as to stabilize the banks in the interest of navigation. Construction works for the purpose of improving the navigable channel are under way and maintenance dredging of this channel is also being done. Considerable progress has been made on the set-back levee of the New Madrid floodway, which on June 30, 1931, was 83 per cent completed. All work on the Bonnet Carre spillway structure was completed Feb. 10, 1931, and side levees are approaching completion.

ORGANIZATION OF THE NAVY

ORGANIZATION OF THE NAVY

By S. P. FULLINWIDER

COMMANDER, UNITED STATES NAVY

ADMINISTRATION

The Secretary of the Navy.—

The President of the United States is Commander-in-Chief of the Navy. By constitutional authority and supplemental legislative action, the President delegates his authority in large part to the Secretary of the Navy. To assist the Secretary in his multitudinous duties, notably those pertaining to the maintenance and operation of the shore establishments, there is an Assistant Secretary of the Navy. In the absence of the Secretary, his authority and responsibilities devolve upon the Assistant Secretary. A second assistant, the Assistant Secretary for Aeronautics, has cognizance of matters pertaining to naval aeronautics.

The Staff.—While the head of the organization is civilian, the administrative personnel of the Navy Department is almost exclusively naval. The organization comprises two main groups of bureaus and offices; one for the maintenance of the personnel and material of the Navy, the other for the direction of its activities towards the objectives of the naval policy. The former group constitutes a routine staff, the latter a general staff, or, in American phraseology, an Office of Naval Operations.

BUREAUS OF THE NAVY DEPARTMENT

Bureau of Navigation has cognizance of matters of enrollment, training, administration, discipline, and discharge of the personnel of the Navy. It supervises the Naval Academy and provides for the subsequent technical education and the examination and promotion of officers. For the enlisted personnel, the Bureau maintains recruiting offices throughout the country, training stations where recruits are given elementary naval training, and technical schools for specialized training. Special technical courses, together with the

training and experience given the enlisted men throughout their service, constitute an extensive educational system which is not only essential to the Navy but is also of great value to the men after they return to civil life. While the Bureau is charged with the training of individuals, it is not responsible for ship efficiency. It fixes the proper complements of officers and men for each type of ship, assigns individuals to specific duty, and furnishes them transportation when travel is necessary. It keeps the service records of all officers and men. The Bureau provides for the recreation and entertainment of enlisted men. It controls the Naval Observatory, the Hydrographic Office, and the Naval Home. The work of the Naval Observatory is primarily connected with the astronomy of position. It prepares the *American Ephemeris* and *Nautical Almanac* which are indispensable to navigators in determining their position at sea. Accurate time also is necessary for navigators as a check on their chronometers. The Observatory broadcasts three sets of time signals daily. By means of their chronometers and sextants, navigators are thus enabled by computation to determine their position accurately. The time service is available throughout the United States as well as at sea. The Hydrographic Office furnishes charts and navigational publications to the naval service and to commercial vessels as well, and it conducts hydrographic surveys in foreign waters.

Bureau of Medicine and Surgery administers the naval hospitals, including the hospital ships of the fleet, and the medical work on board ship through the Medical Corps, Dental Corps, Hospital Corps, and Nurse Corps. The female nurse corps serves only on shore. The Bureau supervises hygiene both ashore and afloat. It examines recruits before enlistment, conducts medical examining

IX. DEFENSE AND ARMAMENTS

boards, and keeps medical records of all officers and men of the Navy and Marine Corps for reference in case of disability and for the information of the Pension Office. The Bureau provides a post-graduate course for a limited number of medical officers and dentists at the Naval Medical School, and assigns other officers to various medical schools and hospitals for post-graduate instruction.

Bureau of Construction and Repair, in cooperation with other bureaus concerned, designs and supervises the construction of ships of the Navy, and has cognizance, through its organizations at naval stations, of the docking and repair of vessels. The Bureau maintains an experimental model basin at the Navy Yard, Washington, D. C., where models not only of naval vessels but also of commercial craft are tested.

Bureau of Engineering has cognizance of the design and construction of the power plants of vessels and of radio and other communication apparatus for the Navy both ashore and afloat. It is charged with the maintenance of the machinery of vessels of the fleet in the best possible condition. It conducts much research and development work. It keeps the service informed on engineering topics such as engineering tests, developments, improvements, and discussion of material casualties.

Bureau of Ordnance designs and manufactures, or procures, weapons and ammunition and the range-finding and fire-control apparatus required for their use. It operates numerous plants, including the Naval Gun Factory, Washington, D. C., where ships' guns and mounts and various other ordnance material are manufactured; the Naval Torpedo Station, Newport, R. I., which manufactures torpedoes; the Naval Powder Factory, Indian Head, Md., where a large part of the powder used by the Navy is manufactured; the Naval Proving Ground, Dahlgren, Va., where all naval guns are tested before their installation on board ship, and where much experimental work is carried on; ammunition depots, mine depots, etc. The Bureau engages in

much research and experimental work.

Bureau of Aeronautics administers the appropriations for the development, procurement, and operation of aircraft for the Navy and Marine Corps. In cooperation with the Bureau of Navigation, aviation training stations and aviation service schools are maintained and operated at Pensacola, Fla.; Hampton Roads, Va.; and San Diego, Calif. At the Naval Academy, midshipmen are given an indoctrinal course in aviation including flight instruction in various types of aircraft. A lighter-than-air training station is maintained at the Naval Air Station, Lakehurst, N. J., for instruction of officers. A number of other schools and post-graduate courses are provided for the education and training of officers and enlisted men in aviation specialties. The Bureau conducts its research work at the Naval Aircraft Factory and various naval stations and also at certain specialized agencies outside the Navy. Flight tests for the Bureau are usually carried out at the Naval Air Station, Anacostia, D. C. An experimental division is maintained at the Naval Air Station, Hampton Roads. About 1000 officers and nearly 11,000 enlisted men of the Navy and nearly 1,300 officers and enlisted men of the Marine Corps are connected with aviation activities.

Bureau of Supplies and Accounts, officered by the Supply Corps, handles the finances of the Navy, pays the personnel, both civil and naval, and makes all contracts involving funds. It provides food and clothing for all enlisted personnel and maintains the stocks of materials for itself and other bureaus which must be kept in store ready for routine use or for the emergency of war.

Bureau of Yards and Docks, officered by the Civil Engineer Corps of the Navy, has cognizance, with few exceptions, of the design, construction, and maintenance of the public works and public utilities of the Navy. As all its services are rendered for the facilitation of the

ORGANIZATION OF THE NAVY

work of other organizations of the Navy, it consults each of them in matters that concern it and lays out its plans accordingly.

OFFICE OF NAVAL OPERATIONS

The Office of Naval Operations accepts ships, men, and supplies from the maintenance side of the Department, works them up into efficient tactical organizations, and operates them in peace and war to carry out the policies of the Government. The Chief of Naval Operations is ranking officer of the Navy by virtue of his office. The office comprises several divisions. The Fleet Training Division is in charge of target practice, and engineering competition. By a system of competition and observation it promotes ship and fleet efficiency. The Office of Naval Intelligence collects information of naval import, both foreign and domestic, and disseminates same to the naval service and to other interested government departments. The War Plans Division prepares plans for war operations under various conditions, such plans usually providing for the mobilization of the active and reserve forces, concentration in suitable areas, arrangements for supply and maintenance of the fleet, and decision as to objectives. The Material Division coordinates the arrangements of the material bureaus for repairs of vessels. The Ship Movements Division manages the ships and fleets in commission. The Naval Communications Office handles all radio and telegraphic operations. It maintains an extensive radio-compass service along the coast to furnish compass bearings to vessels at sea; broadcasts from numerous stations weather and hydrographic bulletins and time signals for the aid and safety of commercial as well as naval vessels; and furnishes needed communications to commercial aircraft services.

JUDGE ADVOCATE GENERAL

The Office of the Judge Advocate General has cognizance of all legal affairs of the Navy Department, both civil and military. The civil division handles those pertaining to legislation

and general and naval law, admiralty court cases, collections of indebtedness to the government, sales of naval vessels, inventions and patents, real estate matters, and, in general, such other legal business as arises in the conduct of any great corporation. The military division supervises the legal part of the discipline of the Navy personnel, reviews the records of courts-martial previous to action by the Secretary of the Navy, and supervises the naval prisons.

MISCELLANEOUS DIVISIONS AND BOARDS

Navy Yard Division (Office of the Assistant Secretary) handles matters pertaining to the civil service employees of the naval establishment within and without the continental limits of the United States, at Washington, at navy yards, naval stations, inspection offices, supply stations, ordnance plants, etc.; supervises technical operating equipment at navy yards; and administers safety engineering work at naval establishments.

Naval Petroleum Reserve Office administers all matters relative to naval petroleum and oil-shale reserves and all general policy relative to future fuel-oil supplies for the Navy.

Office of Technical Aide administers the naval research laboratory at Bellevue, D. C.

The Joint Board is an advisory body to the Secretaries of War and the Navy upon major questions affecting the two services jointly. Such questions are referred to it by either secretary or may originate within the Board.

The Aeronautical Board is charged with the preparation of plans to prevent competition in the procurement of material; recommendation regarding projects for experimental stations on shore, coastal air stations, and for stations to be used jointly by the Army and Navy; and with the consideration of estimates for appropriations for the aeronautical programs of the Army and Navy with a view to the elimination of duplication and a helpful cooperation between the services.

IX. DEFENSE AND ARMAMENTS

The General Board is charged with the shipbuilding policy of the Navy and is called upon by the Secretary for recommendations regarding important matters of departmental policy. In its consideration of matters submitted to it the Board holds exhaustive hearings.

The Navy Budget Office is the representative of the Bureau of the Budget which controls the financial estimates for the Navy. After receiving the President's orders, the Budget Officer allots to each department of the Government the sum it is to have for the year. The Secretary of the Navy, in council with the Bureau Chiefs, then allots to each of them a sum, the total of which will exhaust the allotment and a bill is prepared for submission to Congress, which controls the policy in a great degree, through its appropriations.

Secretary's Council.—The various branches of the Department are co-ordinated by the Secretary's Council, at which the Chiefs of Bureau and other officers periodically meet to discuss and arrange for current work.

UNITED STATES MARINE CORPS

The Marine Corps is a complete military organization within the naval establishment. Its organization and administration are similar to those of an army, with modifications to meet naval requirements. A marine is a sea soldier serving either ashore or afloat as circumstances require. The Corps is headed by the Major General Commandant, whose headquarters are in the Navy Department. The present strength of the Corps is about 1150 commissioned and warrant officers and 18,000 enlisted men. While the primary function of the Corps is to furnish marine detachments for service on board vessels of the Navy, and guards for naval stations, a conspicuous and most important function has been to provide expeditionary forces for service incidental to political disturbances and resultant strife abroad, notably in Nicaragua, Haiti, and China. The Corps maintains its own aviation organization. It maintains a limited

number of officers and enlisted men as students at various service schools of the Marine Corps, the Navy, and the Army. It also provides, in co-operation with certain correspondence schools, a standard high-school course, which makes it possible for any marine with a grammar school foundation to continue his education while in service.

NAVAL SHORE STATIONS

The activities of the Navy ashore are varied and extensive. The properties occupied for naval purposes number nearly 1,000. Of these about 200 are used for major activities and the others for minor activities, such as radio stations, recruiting offices, rights of way, landings, etc., with some unused reservations. At the active yards and stations are dry docks, sea walls, piers, buildings for various purposes, power plants, railroads, service lines, and equipment of various kinds required for the repair and provisioning of the sea and air fleets, training and hospitalization of personnel, storage of supplies, research and experimentation, and other industrial and military purposes. The physical work of maintenance of the Navy is carried on principally at the navy yards and other shore stations which are operated mainly by civilian personnel and directed from the Navy Department by the Navy Yard Division under the Assistant Secretary. The principal yards and stations are each industrially organized under a commandant who carries on the work of construction, repair, and supply of ships.

NAVAL SEA FORCES

United States Fleet.—A few ships take orders directly from the Office of Naval Operations, but the great majority are units of fleets or squadrons. The largest command, known as the United States Fleet, is composed of all types of ship, both combatant and auxiliary, including battleships, aircraft carriers, cruisers, destroyers, and submarines, besides auxiliary ships for supply, repairs, and hospitals. These ships, all under one commander-in-chief, are grouped in appropriate sub-

ORGANIZATION OF THE NAVY

divisions under flag officers who are responsible for drills, maneuvers, efficiency and discipline of their respective commands. Pursuant to the reorganization of the United States Fleet, Nov. 15, 1930, it comprises the Battle Force, Scouting Force, Submarine Force, and Base Force.

The Battle Force consists of four battleship divisions, cruiser divisions, destroyer flotillas, aircraft carrier division, and mine squadron.

The Scouting Force is composed of cruisers, destroyers, and aircraft carrier; also a Training Squadron composed of two battleships and several destroyers with reduced crews for the training of naval reserves and Reserve Officers' Training Corps students.

The Submarine Force comprises submarines and the vessels necessary for their maintenance.

The Base Force is composed of auxiliary vessels upon which the fleet relies for supplies and services. In the fleet, the types of vessels are organized into forces for administrative, indoctrinal, and fundamental training purposes.

Operation.—Units of these forces are organized into major task groupings based on geographical considerations and on the requirements of peace-time training and operations. The Battle Force habitually operates in the Pacific and the Scouting Force in the Atlantic; but at least once each year the entire fleet is concentrated in either the Pacific or the Atlantic for strategical and tactical exercises. The fleet, or portions thereof, holds joint exercises with the Army, from time to time, to work out problems of coast defense. A regular routine of gunnery exercises is carried out by all combatant vessels, and all classes of vessels are in competition in engineering performance throughout the year.

The United States Asiatic Fleet is the second largest command. It is composed of cruisers, destroyers, submarines, gunboats, and auxiliaries. Owing to the unsettled conditions in China and the consequent hazard to American lives and interests, the

Asiatic Fleet maintains patrols in South China and on the Yangtze River; and, in addition, keeps cruisers and destroyers so distributed as to be ready for emergencies at affected ports. Marine contingents are maintained on shore at Shanghai and at the American Legation in Peiping.

NAVAL RESERVES

Fleet Naval Reserve.—The Naval Reserve comprises three main classes: the Fleet Naval Reserve; the Volunteer Naval Reserve, and the Merchant Marine Naval Reserve. The Fleet Naval Reserve is divided into four classes, known as F-1, F-2, F-3, and F-4. Men of the F-1 class are those regularly organized into divisions, battalions, and squadrons for general combatant duty afloat, including aviation duty, who regularly attend drill and make a two weeks' practice cruise annually, for which drill and active service they receive pay. Class F-2 consists of men who, at their own request, are assigned to the reserve for a period of four years at the expiration of a regular Navy enlistment. They are subject to recall to active duty in the event of a national emergency, and receive a yearly retainer pay of \$25. Classes F-3 and F-4 consist of men who have transferred to the reserve after serving 16 and 20 years respectively in the regular Navy.

The Volunteer Naval Reserve is composed of individuals rather than organizations. Its officers are in two categories, (a) general service, and (b) special service. The standards for the former are the same as for the Fleet Naval Reserve. The latter are appointed primarily for duty on shore.

The Merchant Marine Naval Reserve is composed of licensed officers of the merchant marine who follow, or who have followed, the sea as a profession and who meet certain requirements as to service in public or private vessels of the United States. Merchant vessels meeting certain requirements are authorized by law to fly the Merchant Marine Naval Reserve flag.

IX. DEFENSE AND ARMAMENTS

FUNCTIONS OF THE NAVY

BY S. P. FULLINWIDER

COMMANDER, UNITED STATES NAVY

STATEMENT OF NAVAL POLICY

The functions of the Navy are indicated, in large measure, by the naval policy. Naval policy is the system of principles, and the general terms of their application, governing the development, organization, maintenance, training, and operation of a navy. It is based on and is designed to support national policies and national interests. It comprehends questions of number, size, type, and distribution of naval vessels and stations, the character and number of the personnel, and the character of peace and war operations. The fundamental naval policy of the United States is the maintenance of a navy of sufficient strength to support the national policies and commerce, and to guard the continental and overseas possessions of the United States.

OBJECTIVES OF THE NAVY

More specifically, the general naval policy, as formulated by the Navy Department, includes, among others, the following objectives: To create, maintain, and operate a navy second to none and in conformity with treaty provisions; make war efficiency the object of all training in time of peace; develop and organize the navy for operations in any part of either the Atlantic or Pacific; organize the navy as far as possible so that expansion only will be necessary in the event of war; make the strength of the navy for battle the object of primary importance; and for exercising ocean-wide control of the sea for protection of American interests and of overseas and coastwise commerce next in importance; support American interests, especially the expansion and development of American foreign commerce, and to make every effort, both ashore and afloat, at home and abroad, to assist the development of the American merchant marine; encourage, and endeavor to lead in, the development of the art

and of the material of naval warfare; give every encouragement to civil aviation with a view to advancing the art and to providing aviators and aircraft production facilities available for war; cultivate friendly and sympathetic relations with foreign nations; maintain a marine corps of such strength that it will be able adequately to support the navy by furnishing detachments to vessels of the fleet, guards for shore stations, garrisons for outlying positions, and by the maintenance in readiness of expeditionary forces; cooperate fully with all other departments of the government.

ANALYSIS OF NAVAL FUNCTIONS

Building and Maintenance.—The building and maintenance policy contemplates the construction and maintenance of an efficient, well-balanced fleet in all classes of fighting ships as allowed by treaty provisions, and the preservation of this status by building replacement ships and by disposing of old ships in accordance with continuing programs. Further, it is the policy to make superiority of armament, in their class, an end in view in the design of all fighting ships, and to provide great radius of action.

Personnel.—The personnel policy includes the maintenance of the personnel at the highest standard and in sufficient numbers to carry out the building, replacement, and operating policy; the development and coordination of systematic courses of instruction and training for officers, petty officers, and enlisted men; and the organization and training of naval and marine corps reserves to provide the personnel necessary for mobilization.

Operation.—The operating policy provides for a general scheme of progressive education and training of the personnel; the assembly of the active fleet for a period of not less than two

NAVAL CONSTRUCTION AND EQUIPMENT

months each year for exercises in strategy and tactics; the maintenance in commission, fully manned and in active training, of all fighting ships possible; the maintenance of reserve vessels in condition for active service; and the exercise of such economy in expenditures as is compatible with battle efficiency.

Naval and Commercial Bases.—A system of outlying naval and commercial bases suitably distributed, developed, and defended, is one of the most important elements of national strength; therefore, it is the policy to maintain all existing stations that would be needed in the event of war; to further develop the stations in Hawaii, the Canal Zone, and the San Francisco Bay area; and to encourage the development of commercial facilities that would be useful to the navy in time of war.

Communications.—The communications policy comprises the maintenance

of a naval communication system based on the requirements of the fleet in war; the development of such radio communications as may aid maritime and aviation interests; co-operation with the radio and cable organizations of the United States and other countries; and the provision for and operation of a network of long-range radio stations for communication with the fleet and the merchant marine in any part of the world, and with overseas possessions.

Information.—Recognizing the great educational value of imparting information bearing on naval matters through appropriate public and private institutions of our country, it is the policy to furnish the public with full information of the Navy, when it is not incompatible with military secrecy, including its activities at home and abroad, its educational features, and its contributions to science and industry.

NAVAL CONSTRUCTION AND EQUIPMENT

BY PETER BAIN

EDITOR, *American Shipping*

ECONOMIC AND POLITICAL FACTORS

Armament Limitation.—The prolonged industrial and commercial depression with, on the one hand, its associated fall in public revenues and, on the other, the upward trend in public expenditure, early conspired to bring about a call for economies in most departments of the Federal Government. In consequence, naval activities were in greater or lesser degree restricted or postponed. In addition, throughout the period under review, it may be assumed that the World Disarmament Conference scheduled for February, 1932, exerted a restraining influence; nay more, threw around the question of still greater limitations of armaments, a genuinely sympathetic atmosphere. Thus, unspectacular, yet far from uneventful, was the 1931 naval record. In many respects it was a period of "backing and filling," the process

being especially observable in popular action and reaction towards what was, with projected further limitation, a predominant note,—upbuilding of the physical and personnel constituent of the Navy to the London Treaty privilege of parity with Great Britain. In this connection, ratification of the London Treaty for the Limitation of Naval Armaments was completed Dec. 31, 1930. On Jan. 1, 1931, President Hoover declared the treaty to be in effect, thus completing the efforts begun in Washington in 1922 on behalf of naval equipment limitation, and towards effective elimination of competition among the greater navies of the world.

Scrapping and Building Under London Treaty.—With the conclusion of the Treaty Conference and acceptance of its provisions by Congress sometime later, and anticipating

IX. DEFENSE AND ARMAMENTS

no ratification default elsewhere, the United States proceeded almost immediately to reduce such existing equipment as came under limitations fixed for us. In the Fall of 1930, the battleships *Florida*, *Utah*, and *Wyoming* had been ordered decommissioned and rendered unfit for battle service; the action taken being in conformity with the Treaty stipulation that battleship strength be 15 such units for both ourselves and Great Britain. At the same time, reduction of destroyer and submarine strengths was also in process, the former to 150,000-tons and the latter to 52,700-tons, the maximum in each case called for by the Treaty. To be on cruiser parity with Great Britain, however, instead of cutting-down it became our duty to build-up. In that respect, we had, partly in process and fully authorized by Congress, the necessary construction program. This provided for eighteen 10,000-displacement ton, 8-inch gun equipped, units. Conference terms indicate that sixteen of these cruisers can be completed during the life of the Treaty; the seventeenth may be commissioned, Jan. 1, 1937, or one day after the Treaty expires, but the eighteenth can not be completed before 1938. Aircraft carrier strength is another direction to which upbuilding applies, the maximum permissible being 135,000 tons. On Jan. 1, 1931, our tonnage was 66,000, with one new carrier of 13,000-tons under construction.

BATTLESHIP MODERNIZATION

Battleships *Pennsylvania* and *Arizona*, now modernized, have rejoined the fleet. The *New Mexico*, *Mississippi* and *Idaho* are undergoing modernization, the first-named at the navy yard, Philadelphia and the other two at Norfolk. Completion of these three vessels, which will end the battleship modernization program, is, in the case of the *New Mexico* and *Mississippi*, respectively, set for August and September, 1933, and February, 1934 for the *Idaho*. The work to be undertaken is, in general, similar to work undertaken on the *Oklahoma*, *Nevada*, *Pennsylvania*, and

Arizona, and consists of the installation of additional protection against submarine and air attack, reboiler-ing, replacement of main propelling machinery and auxiliaries, elevation of turret guns, replacement of present anti-aircraft battery with 5-inch anti-aircraft guns, installation of new forward and after-ship and fire-control stations with modernized fire control, and such miscellaneous repairs and alterations as are necessary to place these vessels in an up-to-date condition when they return to the fleet upon completion of their modernization. The addition of blisters made necessary an increase in horsepower in order to maintain the previous maximum speeds. To obtain this it was necessary either to install new machinery or completely to modernize the old. The bids for installing new machinery of the geared steam turbine-drive type were materially less than those for installing or modernizing machinery of the electric-drive type. For this reason the decision was made to install geared-turbine machinery. With the completion of the *Pennsylvania* and *Arizona*, modernization of 7 of the 15 battleships retained by the United States under the London Treaty has been completed.

NEW CONSTRUCTION

Seven 10,000-ton cruisers are at various stages of construction. With progress proceeding at a satisfactory rate, prospective completion dates are indicated as follows:—*New Orleans*, June, 1933; *Portland*, August, 1932; *Astoria*, October, 1933; *Indianapolis*, August, 1932; *Minneapolis*, October, 1933; *Tuscaloosa*, March, 1934; and *San Francisco*, February, 1934. Aircraft carrier *Ranger* is expected to be completed in May, 1934. Submarines *Dolphin* and *Cachalot*, under construction at Portsmouth navy yard are due for completion in August, 1932 and September, 1933 respectively. The *Cuttlefish*, being constructed by the Electric Boat Co., is scheduled for completion in November 1933.

NAVAL CONSTRUCTION AND EQUIPMENT

NEW VESSEL PLANS

Submarines.—Contract plans and specifications for submarines *Cachalot* and *Cuttlefish* indicate that the design is for vessels of appreciably smaller size than other submarines built since the war, and represents the endeavor to obtain a maximum of offensive and seagoing qualities on a reasonable displacement, having in mind the restricted global tonnage of submarines allowed by the London Treaty.

Destroyers.—Contract plans and specifications for destroyers Nos. 348 to 358 were completed during the past year, thus constituting the first destroyers to be designed since the war-time vessels of this class, and the first to be designed under the limited standard displacement of 1500 tons allowed by the London Treaty. With the latter in mind, every effort was made to achieve the least weight compatible with required strength and realization of maximum military characteristics. A longitudinal system of framing was adopted, welding was extensively employed, and aluminum alloys largely specified for fittings and furniture; all contributing to a substantial saving of hull weight.

Miscellaneous Design.—A number of designs of various types of yard craft were made. Of these the most important was that of a 110-ft. harbor tug with Diesel-electric propulsion. Other designs were for a 65-ft. tug, a self-propelled garbage lighter, and for non-self-propelled water and sludge barges, and 500-ton and 250-ton open lighters. Plans so prepared are to be standard for vessels of similar types constructed in the future. Units of these different types are now under construction at various navy yards. All are of completely welded construction, and expectations are, from the building of some 19 of these various types of small, all-welded vessels, the construction of which is now under way or completed, that not only will economy in construction result but the wide experience so gained will be of the utmost value in extending the

use of welding in the construction of large naval vessels.

EXPERIMENTAL MODEL BASINS

Large Models.—Tests conducted on models of ships and propellers increased slightly in number over the preceding year. Percentage of private work, due to a reduction in new merchant ship contracts decreased from 41 per cent in 1930 to 26 per cent in 1931. Correspondingly, the percentage of time devoted to tests for all agencies other than the Navy Department decreased from 75 per cent to 47 per cent. An increase of from 26 to 48 per cent of time thus became available for strictly naval work. The 30-ft. model basin was in use for about 70 per cent of the time in preparation for and, in conduct of, special tests.

MAINTENANCE OF THE FLEET

Insufficiency of Appropriations.

—The policy of restricting repairs to those essential to safe and satisfactory operation was continued during the 1931 period, funds still being insufficient for maintenance work that should be done. By direction of the Secretary of the Navy, only such alterations as were of the highest importance and of immediate urgency were undertaken on behalf of vessels in service. Obligations of funds for maintenance, operations, and repairs; for care of vessels out of commission and necessary costs at shore stations, tend to leave but meager resources for improvements to vessels of the active fleet. Thus, it became necessary to defer attention to a number of improvements affecting the military efficiency of ships in service.

Battleships.—Maintenance in the battleship section consisted largely of equipment betterment. It should be borne in mind, however, that structural changes are a more or less essential accompaniment. Airplane handling winches, improved turrets and wrecking mines, catapult, stern airplane crane, flame-proof seals on broadside ammunition hoists, high

IX. DEFENSE AND ARMAMENTS

pressure gas-ejection system, blister drainage system, experimental machine-gun installations, and high power signal searchlights, constituted the more notable maintenance effort in the battleship section.

Destroyers.—Ultimate reduction to London Treaty tonnage caused 55 destroyers of high priority to stay out of commission and be maintained in the highest state of readiness consistent with funds available. All decommissioned destroyers not so designated are to be disposed of before Dec. 31, 1936. Expenditures are limited to those necessary to keep the vessels afloat. The *Stoddert*, decommissioned during fiscal year 1930, was converted into a radio-controlled, high-speed destroyer, target unit. The *Boggs* and *Kilty*, also out of commission have been selected as the remaining two vessels to be converted into radio-controlled target units, thus completing the Department's program. Conversions of the *Boggs* and the *Kilty* are expected in fiscal years 1932 and 1933, respectively. Due to stability conditions as a result of topside weights added since their construction, a water-ballast system, to be used under certain conditions to compensate for fuel oil used, is to be installed on all destroyers in service. Installation was completed on one vessel and will be continued on others undergoing overhaul in 1932 until all are so equipped in 1933.

Submarines.—Beyond installation of protective devices, only minor improvements were made on the older submarines, those of the "R" and "S" classes still in commission. A general improvement as regards leakage of fuel oil is believed to have resulted in large degree from the further installation of suction or "no pressure" fuel-compensating systems. Improvements on the *Barracuda*, (ex V-1 to V-3 class), were confined chiefly to overcoming the overweight condition.

Auxiliaries.—A new streamline rudder designed by the Bureau of Construction and Repair was installed on the *Ramapo* to reduce resistance and compare its efficiency with other

types of streamline rudders. The *Bushnell* was outfitted as flagship of the submarine force, U. S. Fleet, and the *Argonne* as flagship of the base force, U. S. Fleet. The *Procyon*, relieved as flagship of the Fleet Base Force, was converted into a New York State school ship—Merchant Marine Academy—and renamed the *Empire State*. Bulk gasoline stowage on the *Cuyama* was altered to a hydraulic system with a view to increased safety of operation. Minesweepers *Sandpiper*, *Teal*, *Gannet*, *Swan*, *Quail*, *Avocet* and *Heron* were equipped or authorized to be equipped with increased weight-handling facilities and increased gasoline-carrying capacity to enable them to tend the new patrol-type seaplanes. Fitting and equipping six mine-sweepers and submarine rescue vessels was completed, as were, also, the submarine salvage pontoon program and the provision of pontoon stowage barges.

Airplane Carriers.—Extensive improvement of firefighting facilities was carried out on the *Lexington* and *Saratoga* during their regular overhauls. Improvement of like type was authorized and started on the *Langley*. Additional quarters and several items of an experimental nature were undertaken. Redesigned blading was installed in the second row of the first stage and in the ninth and eleventh stages of all main turbines of the *Lexington* and *Saratoga* and new nozzle blocks were installed on all four turbines of the *Lexington*.

Light Cruisers.—Two combatants of latest type were installed on the *Richmond*. Battery rearrangement was continued to the extent of removing Nos. 1 and 2 guns from the *Detroit* and *Raleigh*. A new auxiliary steering and radio battery aft was installed on the *Cincinnati*, *Milwaukee*, *Raleigh*, *Detroit*, *Richmond*, *Trenton* and *Memphis*. Boat stowage improvements were completed on the *Cincinnati*, *Raleigh*, and *Richmond*. As the vessels became available, other changes bearing on military effectiveness also were carried

out. These included: storage for spare torpedoes on the *Cincinnati*, *Raleigh*, and *Richmond*; storage for fragmentation bombs on the *Milwaukee*, *Cincinnati*, *Trenton*, and *Memphis*; segregation of the warheads from the 6-inch shells on the *Cincinnati* and *Raleigh*. The last named had its gasoline-carrying capacity increased approximately 50 per cent by installation of an additional tank. Ventilation changes and heating improvement were accomplished on the *Cincinnati* and *Raleigh*. Study and investigation were made of reported inadequate ventilation of engine rooms of all light cruisers with a view to correcting the defects at future overhauls.

Heavy Cruisers.—Improvement, which included enlargement of chart house and bridges, and fitting of special-treatment steel plating around bridge structure, and on the bridges of each vessel, was undertaken on the *Pensacola* and *Northampton*. Similar alterations are contemplated on the *Salt Lake City*, *Chester*, *Louisville*, *Chicago*, *Houston*, and *Augusta*. To bring the *Houston* up to the latest standard designated for major force flagships, alterations were made and completed whereby accommodations were provided for additional officers and crew, for additional offices, and for increased radio facilities. During the fitting-out periods of the sister ships *Chicago* and *Augusta*, like changes were made. By installation of additional structural stiffening under the decks and on the shell, vibrations at high speed have been reduced appreciably on heavy cruisers *C. A. 24-31*. Use of welding as a weight-saving factor was materially extended relative to the five last cruisers building.—*C. A. 32-34-36-37-38*—the major innovation being the welding, except for the seams of the shell plating, of all the structure of these vessels from the bow to about 84 ft. abaft the bow.

Cruiser Troubles.—Defective sternpost castings were discovered on the *Augusta*, *Chicago*, *Northampton*,

Chester, and *Louisville*. These have been or will be replaced. The sternpost of the *Chester*, the first to be found defective, was replaced with one of the original design. New castings of modified design insuring greater soundness and greater strength have been installed on the *Northampton* and, on the occasion of forthcoming overhauls, the *Louisville*, *Chicago*, and *Augusta*, will be similarly refitted. Due to the heavy-rolling characteristics of the 8-inch gun units, the bilge keels of all were extended approximately 100 per cent over their original depth so as to reduce amplitude of roll, especially under synchronous rolling conditions. Scheduled overhauls of the *Pensacola*, *Northampton*, and *Augusta*, permitted replacement of the original blade bilge keels with larger ones of V-shape design. The remaining units, the *Salt Lake City*, *Chester*, *Louisville*, *Chicago*, and *Houston*, had their original bilge keels extended in depth by adding structural plating in single blade form. To further reduce rolling, anti-rolling tanks in pairs have been installed as a trial measure on the *Northampton* and *Pensacola*. The tanks are designed to operate automatically, their dampening effect being throttled as desired by control valves. Similar installations are contemplated for the other heavy cruisers.

District Craft.—During the fiscal year, yard craft were completed as follows: self-propelled airplane wrecking derrick for naval air station, Hampton Roads; 2400 cu. ft. wooden garbage lighter for Guantanamo; three 250-ton open lighters, one 100-ton covered lighter, one hydraulic gasoline lighter, two 500-ton open lighters converted to covered lighters, and one 250-ton steel open lighter. Yard craft under construction consisted of: two all-welded 65 ft. motor tugs; two self-propelled all-welded airplane wrecking derricks; one sludge removal barge for tank cleaning; three self-propelled all-welded garbage lighters; one self-propelled all-welded freight lighter; five

IX. DEFENSE AND ARMAMENTS

wooden lighters; one water barge and one all-welded harbor tug. Design of a 110 ft. Diesel-electric harbor tug was completed. The first of such vessels is to be constructed in the near future at the Boston yard.

SUBMARINE PROTECTIVE DEVICES

On all submarines in commission, substantial progress was made towards application of the program of alterations to improve safety and facilitate rescue and salvage. Of the various items on which investigation had been concluded and the work authorized, but few remained uncompleted. A marker buoy equipped for telephone communication was, following a satisfactory test, adopted for service, and construction orders placed for two such buoy units on behalf of each submarine in commission. Upon completion, the buoys will be installed as the vessels become available. A new design, improved type of rescue chamber was constructed and completed and, later, successfully passed a deep submergence test of 400 ft. Tests were conducted, during which personnel were removed from the interior of *S-4* and brought to the surface while that vessel lay on the bottom in 60 feet of water. Construction of four more rescue chambers has been authorized, providing one each for the submarine bases at New London, Coco Solo, San Diego, Pearl Harbor, and Cavite. Covering the changes necessary, plans were being prepared for all submarines to permit seating the chamber over the end compartment hatches. Successful operation of the submarine training tank at New London warranted construction of a second tank at Pearl Harbor, which will incorporate the experience gained from the first one. An apparently satisfactory type of hydrogen detector for submarines having been developed by the Naval Research Laboratory, two of those detectors have been issued to submarines for service tests. Satisfactory preliminary reports led to authorization for the manufacture of 12 additional detectors for issue of two to

each of the 6 ex-V class submarines for trial service tests before proceeding with quantity manufacture for service by all submarines. Investigation continues with the objective of securing a superior absorbent of carbon dioxide to that of soda lime; also of various types of reducing valves toward the development of a type more reliable than those in use.

SHORE ESTABLISHMENTS

Development plans for improving navy yards and shore stations to meet the requirements of the forces afloat were greatly advanced during the past year through enactment by Congress of several Bills for improvements and new construction. Congress also passed the Employment Stabilization Act of 1931 which requires the various executive departments to make up a 6-years' program of construction of public works. A master priority list of projects was in process of development to that end. Towards the purchase of machine tools for last fiscal year, the sum of \$1,500,000 was made available, being subdivided equally between the Bureau of Construction and Repair and the Bureau of Engineering. Relative to the former, requisitions for tools and equipment amounted to \$615,890. Approximately \$100,000 worth of equipment in store at various navy yards on "appropriation purchase account" was withdrawn and installed in yard shops. Equipment valued at \$679,035 was transferred from the armour plant at South Charleston, W. Va., for installation in the various active industrial yards.

MATERIAL AND EQUIPMENT SALVAGE

In addition to the salvage and reconditioning of equipment from decommissioned vessels for re-issue to the service, every possible use of scrap metal has been practised by the various yards. A typical example of salvage and reconditioning has reference to the employment as propelling machinery on garbage and freight lighters, and tugs, of the main en-

gines from decommissioned submarines of the H and K classes. By a system of recording and accounting for special engineering material, a saving of approximately \$100,000 has been effected by deleting from requisitions and requests material which could be substituted from stock or which could be shown as not required. Material thus substituted was obtained from decommissioned vessels and distributed to the best advantage.

TREATY STATUS OF NAVAL POWERS

Construction and the Treaty Quotas.—On Sept. 13 last, the Navy Department issued a comprehensive statement embodying up-to-date data on warship construction by the five leading naval powers. Statistical tables disclosed the surprising information that none was building up to the limits permissible. It was further seen that, if the construction pace were not accelerated promptly, the full Treaty strengths of the various navies could not be realized within the time-limit fixed,—Dec. 31, 1936. Action by our Navy Department in issuing the data was predicated chiefly on the circumstance that a good deal of confusion, if not ignorance, prevailed in the public mind as to the relative progress and positions of the five powers concerned. Again, to help balance the National Budget, departmental heads were instructed later by President Hoover to trim down appropriations wherever possible. Thus, although this action applied particularly to the 1933 estimates, it nevertheless appeared to carry a very direct threat to our Treaty parity aspirations. In a word, it was both claimed and complained that we were, and would be still more, laggard in construction during the balance of the Treaty period. Figures made available through the Navy Department data showed that we were 100,240 tons and Great Britain 57,156 tons behind quotas permissible. It was inferred, of course, following ratification of the Treaty that each of the five naval powers would

promptly take advantage of every privilege accorded. None of them having done so, leads to the conclusion that the London Conference simply placed an extreme limit on naval armament until the close of 1936. For the years 1930 and 1931, the construction permits of the five naval powers were as follows:

United States.—The London Treaty permits this government to construct 116,740 tons of warships of specified classes during the calendar years 1930 and 1931. No ships for laying down in 1930 were provided for by Congress, and only eleven destroyers, with tonnage aggregating 16,500, were provided for under appropriations for the 1931 program. This means that the United States is 100,240 tons (116,740 tons minus 16,500 tons) behind the amount of new warship construction permitted for 1930 and 1931 combined. Comparison is made even more striking by the fact that contracts for construction of only 5 of the 11 destroyers have since been awarded.

Great Britain.—Authorized for 1930 and 1931 to construct 125,406 tons; utilized 68,250 tons; shortage of permissible building under the Treaty, 57,156 tons.

Japan.—Authorized for 1930 and 1931 to construct 37,484 tons; utilized amount not known authoritatively, but a note given with the Navy Department tables said: "The Japanese press has stated that Japan does not propose to complete this entire program by December, 1936, but intends to have certain units in stages of construction. The purpose of this, according to an interpretation of the Japanese press, is that Japan in 1936 won't be 'frozen' in types of ships, and also that she will have, with her new and present ships, complete Treaty tonnage, plus new ships building, the latter to be used as a bargaining power."

France.—Authorized to build 30,000 tons of warships; none of it utilized.

Italy.—Authorized to build 30,000 tons; none of it utilized.

IX. DEFENSE AND ARMAMENTS

NAVAL AERONAUTICS

By W. A. MOFFETT

REAR ADMIRAL U. S. N.; CHIEF, BUREAU OF AERONAUTICS, NAVY DEPARTMENT

CONSTRUCTION

Five-Year Program Completed.

—The year 1931 was very important to naval aviation in that it witnessed the completion of the 1000-airplane building program authorized by Act of Congress approved June 24, 1926. This Act contemplated a building program extending over five years. But lower aircraft prices, careful economy, and reduction in attrition through improvement of material and flying, permitted the completion of the program in four years, at a total saving of approximately \$23,000,000 over that originally estimated.

U. S. S. Ranger.—Another outstanding event of the year was the laying of the keel and the commencement of the construction of the U. S. S. *Ranger*, the first vessels built by the United States, designed from the beginning as an aircraft carrier. The displacement of the *Ranger* will be 13,800 tons, her speed will be about 29½ knots and she is designed to carry 76 operating airplanes.

The Akron.—On Navy Day, October 27, 1931, the giant navy rigid airship, U. S. S. *Akron*, was placed in commission at the U. S. Naval Air Station, Lakehurst, New Jersey. The *Akron* has a capacity of 6,500,000 cubic feet, and is the largest airship in the world. Her length is 785 feet, her maximum diameter is 132.9 feet; she can carry a useful load of approximately 182,000 pounds and has a range of about 9000 nautical miles at a speed of 50 knots.

AIRCRAFT IN FLEET MANEUVERS

Operation Policy.—Fleet aircraft participated to the fullest extent in all Fleet maneuvers and concentrations, operating during unusually poor visibility and weather conditions. The year witnessed the movement by air with the Fleet of patrol boat squadrons from Hampton Roads to the Panama fleet mobilization area

and return. Thus was inaugurated the policy of actual operation and movement with the Fleet of large flying boats attached to Fleet Air Bases at long distances from their home base. This policy proved very successful and will be pursued in the future.

Los Angeles.—The airship *Los Angeles* made the flight from Lakehurst to Panama to maneuver with the Fleet during the Fleet concentration. This flight required mooring at Guantanamo to an expeditionary mooring mast for refuelling, and operating from the mooring mast installed on the U. S. S. *Patoka* during the stay in Panama. The *Los Angeles* was away from her hangar at Lakehurst and moored in the open continuously for a period of twenty-six days, eleven and a half days of which time she was actually in flight.

VARIED DUTIES OF NAVAL AIRCRAFT

Fishing Schooner Search.—During the year naval aircraft were utilized extensively for assistance in other than the strictly military fields. Among these varied duties was the search for the lost fishing schooner, *Fidelity*, during which search Navy patrol planes operated at distances four hundred and twenty-five miles from shore bases.

Relief Work.—The extensive operations of naval aircraft from the U. S. S. *Lexington*, the *Coco Solo* air base, and the Marine Corps squadrons stationed in Nicaragua in the relief operations after the earthquake in Nicaragua. Doctors, medical supplies and food were delivered to the stricken areas by airplane and general transportation supplied to officials of the Red Cross until the emergency was over.

Mapping.—The mapping photographically of twenty-two hundred square miles of Porto Rico for the

Porto Rican government was accomplished by aircraft.

MECHANICAL PROGRESS

Structural Design.—Research in aircraft structural design has progressed satisfactorily during the year. Methods for determining load factors for airplanes more accurately have been devised, with a result that actual knowledge of strength requirements of aircraft structures during maneuvers, may be determined. Hull and float design has been vigorously pushed with satisfying results. Several different types of floats have been service tested, and weights of floats have been appreciably reduced, maintaining the same strength of structure. This has been due primarily to the reduction in weights by the use of stainless steel and aluminum alloys for the structures.

Engines.—The single row radial air-cooled engine continues in general use for airplane service in the Navy. Due to continued improvement in details of engine design and better fuels, it has been possible to increase power output for the same piston displacement of existing conventional service types during the past year by about ten per cent. Experimental development of new engines of the air-cooled type has proceeded with favorable results. The two row radial air-cooled engine gives promise of satisfactory operation. The advent of dive bombing tactics in the Navy has presented the problem of perfecting the air-cooled engines to withstand higher rotative speeds. This is being accomplished through step by step development, and indications from experiments during the year are that a solution of the problem is within reach.

Propellers.—The adjustable blade aluminum alloy propeller fitted to a chrome vanadium steel hub continues to be the service standard and has given very satisfactory performance. At the same time the Navy is continually experimenting with new propeller developments. Hollow-steel propellers have recently been flight-tested and found to compare favorably with the aluminum alloy propel-

ler in both weight and performance. An experimental order of hollow-steel propellers has been issued to the Fleet for service test. These propellers have high surface hardness to guard against corrosion and erosion. An experimental order of magnesium propellers has also been procured and if the magnesium propeller proves suitable and sufficiently corrosion-resistant for service use, a considerable saving in weight will be effected. Tests with controllable pitch propellers installed on service aircraft are now in progress.

AIRCRAFT PERFORMANCE

An important tendency in connection with the improvement in performance of naval aircraft is the change from the multi-purpose to the single-purpose plane. The only advantage of the former is to reduce somewhat the total number of airplanes and spares required. This, however, is more than outweighed by the reduction in performance which is unavoidable in multi-purpose designs and by the poor disposition of crew and material, even under the best compromise conditions. The present tendency is to place the crew and equipment in the best arrangement for a single-purpose and to design the airplane around this arrangement. The naval designer attempts to secure the smallest and lightest airplane to carry the given load and fulfill a given mission.

EQUIPMENT

Radio.—Parallel to the growth of single-purpose airplanes, the growth of radio has been along similar lines. There are now in use or being developed distinct equipment for the various types of airplane, namely, patrol, scouting, observation, etc. Radio sets have been greatly increased in power recently without appreciable increase in weight. The engine-driven generator is supplanting the wind driven unit. Ignition shielding has been adopted to secure the best radio performance. To aid naval airplanes which under certain conditions fly several hundred miles or more over the ocean, sometimes under conditions of poor visi-

bility, in the return to their ship, radio compasses or homing devices have been developed by the Navy. These homing devices installed on naval airplanes guide the lost or confused pilot so accurately that unless he stops beforehand, he inevitably runs down the antenna from which the homing signals are being transmitted. The instances that these homing devices have been of service have many times repaid the Navy's efforts in developing them.

Instruments.—The steady development of instruments for naval aircraft has been largely along lines of standardization, reduction in size and weight, and methods of test. Improvements consist in smaller and more reliable equipment and better installations, particularly as regards more convenient grouping of the instruments and the indirect lighting of panels. Notable improvements have also been made in equipment for blind flying and navigation. Interest in gyroscopic instruments and their effect on the simplification of instrument flying has been revived by the introduction of a new type of artificial horizon and direction indicator. At the present time the Bureau of Aeronautics has under development a gyro compass for use in aircraft. The development of a satisfactory gyro compass will eliminate the present difficulties encountered with magnetic compasses due to large magnetic masses, such as engines, near the compass.

Emergency Flotation Gear.—Of the distinctly naval aeronautical equipment recently developed by the Bureau of Aeronautics, none is more important than the emergency flotation gear. Its purpose is primarily for the protection of personnel and secondarily for the preservation of material. In naval operations, landplane fighters, scouts, bombers and torpedo planes are sent from their aircraft carriers on missions which take them far over the water. In case of a forced landing, by means of the emergency flotation gear, the airplane is kept afloat in a horizontal position thereby furnishing a reasonably stable float-

ing platform, usually the upper wing. This serves as a refuge for the crew and as a large easily identified object to aid the searching parties.

The gear itself consists of a carbon dioxide cylinder secured in the fuselage and containing the proper charge. Fastened to its head is a special type of valve which, when the pilot pulls the release, allows the liquid to flow through copper tubing to a small piston valve adjacent to each bag. The latter valve first releases the bag from its compartment, and then directs the flow for inflation. In the smaller types of airplanes, two bags are used, usually housed in a flush covered compartment in the upper wing. In the large torpedo and bombing planes a three-bag installation is employed, two being housed in containers inside of the fuselage cowlings forward and the third inside of the rear of the fuselage. It may be interesting to know that the entire emergency flotation gear for a 4000-pound airplane weighs only 60 pounds, and that from the pull of the release to full inflation of the bag requires only 40 seconds.

NAVAL AIRCRAFT OPERATION

The general plan for the operation of naval aircraft provides for all tactical units except certain Marine Corps squadrons to be assigned to the active Fleet. All battleships are supplied with three planes, 8-inch cruisers with four, 6-inch cruisers with two, the aircraft carriers *Saratoga* and *Lexington* with seventy each and the experimental aircraft carrier, the *Langley* with twenty-seven. Patrol and utility planes are assigned to the Base and Scouting Forces of the Fleet and patrol planes to the Fleet Air Bases at Coco Solo and Pearl Harbor. In the Asiatic Fleet, four planes are based on the cruiser *Houston* and twelve on the aircraft tender, *Jason*. The Marine Corps operates two fighting plane squadrons and three observation squadrons. The shore establishment includes only airplanes required for the training of pilots and a small number for administrative and experimental use.

NAVAL EDUCATION

NAVAL EDUCATION

BY CARROLL STORRS ALDEN

HEAD OF DEPARTMENT OF ENGLISH AND HISTORY, U. S. NAVAL ACADEMY

ENLISTMENT AND TRAINING

Applicants for enlistment in the Navy must satisfy certain definite requirements as to their qualifications. Large numbers are rejected, and the educational standards of recruits have in recent years steadily risen. Reports from the Naval Training Stations at Hampton Roads and San Diego show that 80 per cent of the recruits have had one year or more in high school; 28 per cent are high school graduates; and 5 per cent have had one year or more in college. Enlisted men begin their naval career with nine weeks of training at one of the four stations, Newport, R. I., Hampton Roads, Va., Great Lakes, Ill., and San Diego, Calif. During this period they are drilled in infantry tactics, swimming, and rowing, as well as personal cleanliness and care of uniform,—in brief what is essential to prepare them to go on board ship and become a part of the crew. During this training they are being studied and classified as to their special skill and capability. With the large numbers at the stations (2454 men were under training on April 11 and 1512 on July 31) such a scrutiny is necessary if immediately after the recruit training some are to be sent to special schools. Instruction in the latter extends from four to thirty-five weeks. This for many is supplemented by courses of instruction, the material for which is published in pamphlets issued by the Training Division of the Bureau of Navigation, so that men both afloat and ashore may gain in intelligence and efficiency, and have opportunity to advance to a higher rating. During the past year twenty-two courses have been offered in the seaman branch, thirty-three in the artificer branch, as well as other courses for the most part of a general character, making a total of seventy-nine. Thus enlisted men with no previous experience qualify as electricians, machinists, radio

operators, blacksmiths, firemen, shop fitters, painters, etc., gaining what is of great value to them in the Navy, or in civilian life at the close of their enlistment.

UNITED STATES NAVAL ACADEMY

Appointments.—The commissioned officers of the Navy begin their special education at the Naval Academy. Appointments to this institution are made from candidates nominated by senators and congressmen; fifteen are appointed at large from those nominated by the President; and there is also a limited number of appointments made by competitive examination from the enlisted men in the Navy and Marine Corps, from enlisted men in the Naval Reserve and the Marine Corps Reserve, and from the sons of deceased officers, soldiers, sailors, and marines of the World War.

Requirements.—The mental requirements for entrance are about the same as those set by the colleges, and presuppose at least three years of mathematics, three years of English, two years of history, one year of physics, etc. All candidates for admission must pass both mental and physical examinations.

Instruction Courses.—The course at the Naval Academy is four years in length. With subjects cultural and scientific such as are commonly found in technological schools there are those more closely related to the naval profession, such as navigation, seamanship, ordnance and gunnery, engineering, and aeronautics. The first and third summers are assigned to drills at the Academy, and the second and fourth to practice cruises made in battleships selected from the fleet. At the Naval Academy is given theoretical and practical instruction in aviation, each midshipman in addition to

IX. DEFENSE AND ARMAMENTS

ground instruction spending several hours in the air and performing almost every duty except that of handling the controls.

Practice Cruises.—On the summer practice cruise in 1931, the squadron visited Copenhagen, Glasgow, Cadiz, and Gibraltar, midshipmen being granted several days' liberty in each port. On graduation most midshipmen are commissioned ensigns in the line or staff corps of the Navy, or second lieutenants in the Marine Corps.

RESERVE OFFICERS TRAINING COURSES

Reserve officers training courses, established in 1926 at Harvard, Yale, and Northwestern Universities, Georgia School of Technology, and the Universities of California and Washington, have been highly successful. The law allows a total of 1200 students. A full quota has been enrolled and at several institutions there has been a waiting list, students on this list being authorized to attend the classes and drills in the Department of Naval Science and Tactics, to be regularly enrolled when vacancies in the quota permit it.

SPECIAL SCHOOLS

Commissioned officers are sent at appropriate times and in such num-

bers as is practicable for instruction to special schools; among these is the school of the submarine at New London, torpedo at Newport, aviation at Pensacola and Lakehurst, law at Harvard University, and chemical warfare at Edgewood Arsenal. Postgraduate instruction is being given to increasing numbers the first year at Annapolis and the second year (in some cases also a third year) at a technological school or university or at the Naval War College. Instruction is given in various fields, such as engineering (mechanical, electrical, steam machinery, radio, aeronautical, etc.), ordnance, naval construction, and duties of the general line. The Naval War College at Newport gives a senior and a junior course. Both are engaged in the "solution of operations problems, involving command, strategy, tactics, and logistics; historical studies. . .; the study and solution of international law situations with discussions of decisions. . . ." The War College also conducts correspondence courses in strategy, tactics, and international law. Only recently have Naval Academy graduates been permitted to compete for Rhodes Scholarships. Six ensigns were successful the first year and going to Oxford in the fall of 1930 have completed one year of study at that venerable institution.

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

(For further information, the reader may address the following organizations)

SERVICE SOCIETIES

AMERICAN LEGION, 777 N. Meridian Street, Indianapolis, Ind.
AMERICAN REMOUNT ASSN., 810 18th Street N. W., Washington, D. C.
AMERICAN SIGNAL CORPS ASSN., 195 Broadway, New York City.
ARMY AND NAVY UNION, U.S.A., 315 Hazen Bldg., Cincinnati, O.
ASSN. OF MILITARY SURGEONS OF THE UNITED STATES, Army Medical Museum, Washington, D. C.
CHEMICAL WELFARE SERVICE, Edgewood Arsenal, Maryland.
MILITARY TRAINING CAMP ASSN., 19 W. 44th Street, New York City.

NATIONAL GUARD ASSN. OF THE UNITED STATES, 32nd Street and Lancaster Ave., Philadelphia, Pa.
NAVY LEAGUE OF THE UNITED STATES, 1749 E Street N. W. Washington, D. C.
PENNSYLVANIA NATIONAL GUARD, 32nd Street and Lancaster Avenue, Philadelphia, Pa.
QUARTERMASTERS' ASSN. OF THE UNITED STATES, 923 15th Street, N. W., Washington, D. C.
RESERVE OFFICERS ASSN. OF THE UNITED STATES, 1653 Pennsylvania Ave., N. W., Washington, D. C.
SOCIETY OF AMERICAN MILITARY EN-

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

- GINEERS, 810 Mills Bldg., Washington, D. C.
- SOCIETY OF NAVAL ARCHITECTS & MARINE ENGINEERS, 29 W. 39th Street, New York City.
- U. S. ARMY ORDNANCE ASSN., 806 Mills Bldg., Washington, D. C.
- U. S. CAVALRY ASSN., 1624 H Street N. W., Washington, D. C.
- U. S. FIELD ARTILLERY ASSN., 1624 H Street N. W., Washington, D. C.
- U. S. INFANTRY ASSN., 1115 17th Street N. W., Washington, D. C.
- UNITED STATES NAVAL INSTITUTE, Annapolis, Md.
- PATRIOTIC AND HEREDITARY**
- COLONIAL DAMES OF AMERICA, 421 E. 61st Street, New York City.
- DAUGHTERS OF 1812 U. S. NATIONAL SOCIETY, 108 Iona Ave., Narberth, Pa.
- DAUGHTERS OF THE AMERICAN REVOLUTION, Memorial Continental Hall, Washington, D. C.
- DAUGHTERS OF THE REVOLUTION NATIONAL SOCIETY, 420 Lexington Ave., New York City.
- GRAND ARMY OF THE REPUBLIC, Room 3, City Hall, New York City.
- MILITARY ORDER OF FOREIGN WARS OF THE U. S., 149 Broadway, New York City.
- MILITARY ORDER OF THE LOYAL LEGION, 140 Nassau Street, New York City.
- MILITARY ORDER OF THE WORLD WAR, 52 Vanderbilt Ave., New York City.
- NATIONAL SECURITY LEAGUE, 45 West 45th Street, New York City.
- NATIONAL SOCIETY OF THE SONS OF THE AMERICAN REVOLUTION, 1227 16th St. N. W., Washington, D. C.
- NATIONAL SOCIETY OF THE SONS OF THE REVOLUTION, Princeton University, Princeton, N. J.
- ORDER OF FOUNDERS AND PATRIOTS OF AMERICA, 111 Broadway, New York City.
- PILGRIM SOCIETY, Pilgrim Hall, Court Street, Plymouth, Mass.
- SOCIETY OF COLONIAL WARS, 124 E. 58th Street, New York City.
- SOCIETY OF MAYFLOWER DESCENDANTS, 120 E. 71st Street, New York City.
- SOCIETY OF THE CINCINNATI, 136 W. Lanvale Street, Baltimore, Md.
- SONS OF CONFEDERATE VETERANS, Law Bldg., Richmond, Va.
- SONS OF VETERANS, Reading, Pa.
- SPANISH-AMERICAN WAR, NAVY AND MILITARY ORDER, 184 State House, Boston, Mass.
- UNITED CONFEDERATE VETERANS, New Orleans, La.

PART FOUR

ECONOMICS AND BUSINESS

DIVISION X

BUSINESS AND FINANCE

ECONOMIC AND BUSINESS CONDITIONS

By S. S. HUEBNER

PROFESSOR, UNIVERSITY OF PENNSYLVANIA

CONTINUATION OF THE ECONOMIC DEPRESSION

Last year's account described 1930 as a year of almost uninterrupted recession in industrial and trade volume, employment and commodity and security prices. This recession was unfortunately greatly extended during all of 1931, and, again, with but few tangible interruptions. At the close of the year business conditions were practically at the bottom of the two year (1930-31) bear movement, and were reported to average about 33 per cent below normal conditions. Described by the Guaranty Trust Company of New York in its December Survey (*The Guaranty Survey*, Dec. 28, 1931): "The end of the year finds business activity at the lowest ebb since the beginning of the depression. The year 1931, like 1930, has been one of swift and rather steady recession in the volume of business and in prices, punctuated by temporary rallies that created false hopes for recovery. In the early months of both years, there were fairly well defined increases in industrial output and in trade volumes that could not be traced entirely to seasonal causes; and these upturns were regarded in some quarters as the beginnings of business revival.

All such favorable interpretations were discredited by the actual course of developments."

A review of the various barometers of business clearly indicates an unusually low level of business activity during all of the year. In fact, the depression at present is regarded by many writers as comparable with the worst stage reached in the memorable business depression of 1893-6. Check transactions during the first nine months of 1931 fell below those of the same months in 1930 by nearly 26 per cent, and below those of the corresponding months of 1929 by over 44 per cent. As compared with 1930, the volume of stock market transactions during 1931 was also smaller by 29 per cent. As compared with 1929, the 1931 volume decreased by the extraordinary amount of nearly 49 per cent.

DEPRECIATION IN SECURITY VALUES

Railroad shares (using the Babson averages) declined to an average high of only 68.52 in September of 1931, as compared with an average high of 132.37 for the corresponding month of 1930, and with 189.11 for the same month in 1929. In other words, 1931 showed a decline of over 48 per cent

in this important group of common stocks. Industrial shares also reached the low average price level of 140.13 in September, 1931, as contrasted with 245.09 for the same month of 1930, or a decline of 43 per cent for the year. For 1929 the September average high price stood at 381.17, the average price of September, 1931 therefore showing a decline within the two-year period of 63 per cent. The September, 1931 average price for copper shares sank to the extremely low level of 12.7, as compared with 28.2 for the same month in 1930, a decline of 55 per cent, and 80.7 in 1929, a decline of 84 per cent.

FINANCIAL AND INDUSTRIAL CONDITIONS

Banking.—Banking conditions were also very unsatisfactory, the year being prolific with bank failures in all sections of the country, and with highly unprofitable operations for those which maintained their solvency. Money rates for demand loans in New York City reached a monthly average during September as low as $1\frac{1}{2}$ per cent, and for time loans as low as $1\frac{1}{8}$ per cent, as compared with the corresponding averages in 1930 of $2\frac{1}{4}$ and 3 per cent, and of $8\frac{1}{2}$ and $6\frac{1}{2}$ per cent in 1929.

Agriculture.—Brief reference may be made to business conditions prevailing in certain of the leading groups of industries usually not chronicled in regularly prepared and commonly used index tables. According to *The Guaranty Survey* (issue of Dec. 28) the composite agricultural yield per acre for 1931 was approximately 11 per cent in excess of that for 1930, and about equal to the previous 10-year average. Yet the farmer's economic well being is not solely dependent upon volume of output. The price obtained for that output is also a prime essential. From that standpoint the *Survey* points out that: "Prices of agricultural commodities this year have been very unsatisfactory. The agricultural price level was considered low in the fall of 1930; but this fall the prices of corn, hogs, wheat, cotton, and potatoes were only about

one-half of those a year earlier. The official estimate of the value of all crops produced this year amounts to \$4,122,850,000. This figure represents a decline of 29.3 per cent below that last year, which was considered a very unsatisfactory one for the farmer and occasioned a widespread demand for farm relief. The disparity between the decline in the prices of agricultural commodities and those of other industries is clearly brought out by the fact that the unit exchange value of farm products for other commodities is at present only slightly above one-half of what it was before the war."

Manufacturing and Mining.—In many of the manufacturing and mining industries, unlike agriculture, it was possible in a measure to adjust production facilities to the small demand prevailing during the year. Yet even here an extraordinary decline in prices has occurred, on top of the big recession of 1930. Comparing December of 1931 with the same month for 1930, the following decreases in price may be recorded from the many listed in the *Guaranty Survey*: Bituminous coal (Pittsburgh) \$1.30 per ton to \$1.20; copper (New York) 9.87½ cts. per lb. to 6.37½ cts.; hides (Chicago) 11 cts. per lb to 7½ cts.; pig iron (Pittsburgh) \$17 a ton to \$15; steel billets (Pittsburgh) \$31 to \$29; lead (New York) 5.10 cts. per lb. to 3.75 cts.; petroleum (Oklahoma-Kansas) 98 cts. per bbl. to 79 cts.; rosin (Savannah) \$4 per 280 lbs. to \$2.65; rubber (New York) 9 cts. per lb. to 4½ cts.; silk (New York) \$2.50 per lb. to \$2.05; tin (New York) 23.75 cts. per lb. to 21.60 cts.; wool (Boston) 70 cts. per lb. to 59 cts.; and zinc (St. Louis) 4.05 cts. per lb. to 3.15 cts.

RAILROADS

With respect to the railroads, one of the nation's pivotal industries, it may be said that probably no other leading industry has met with such reverses. This is attributable in part to competition from other transportation agencies, such as automobile, motor truck, aeroplane and water transportation. Yet the business de-

pression has also played a major part. As pointed out by the *Guaranty Survey*: "With their obligation to maintain operating schedules despite lower traffic levels, the railways were not afforded the same opportunity as other industries to reduce their overhead in the face of declining business. During the first ten months of this year, the net operating income of Class 1 roads represented an annual return of only 2.05 per cent on their property investment, and it is obvious that the return for the year as a whole will be far below the 5.75 per cent that was specified as fair by the Interstate Commerce Commission. Last year the return on investment amounted to 3.36 per cent." This poor record of earnings has had the further result of numerous dividend cuts or omissions by our leading railroad systems, and in many instances the bonds of these railroads are selling to-day on a receivership basis. As pointed out by the National City Bank in its January issue of *Economic Conditions*, the "common stocks of 46 important railroads are listed on the New York Stock Exchange, of which 31 were paying dividends at the beginning of 1931. Of this number only 6 were able to maintain the same rate of dividend during the year." The same publication presents a further detailed analysis showing that during the year 182,073 shareholders of seventeen railroads had their dividends entirely cut off, while another 354,945 shareholders had their rate of dividend reduced.

BUILDING CONSTRUCTION

In the field of building construction conditions also tended downward to an alarming extent, and that on top of the severe decline of 1930. Last year (Babson's *Summary* of the F. W. Dodge Corporation Reports for 37 eastern states) new building contract awards amounted to only \$4,523,709,600 as compared with \$5,754,290,500 for 1929. This year, however the first nine months of 1931 for which records are available indicates another substantial decrease. For these nine months the new building contracts awarded totalled only

\$2,579,439,900, as compared with \$3,683,399,000 for the corresponding months of 1930 or a decline of 30 per cent. For September, 1931, the awards totalled only \$252,109,700 as compared with \$331,683,500 for September of 1930.

DECLINE IN INDUSTRIAL OUTPUT

In nearly all other outstanding lines of business a very substantial decline in operations is also apparent. Using the latest available production figures in ten leading industries (Babson's *Report*) the showing is as follows: automobiles and trucks (Sept. 1931) only 140,566 as compared with 220,649 for Sept., 1930, and with 415,912 for September, 1929; copper (lbs. Sept.) only 76,176,000 as compared with 113,168,000 for 1930 and 158,804,000 for 1929; steel ingots (tons, Sept.) only 1,547,602 as compared with 3,060,763 for 1930 and 4,510,879 for 1929; bituminous coal (tons, Sept.) 31,919,000 as compared with 38,632,000 for 1930, and 44,515,000 for 1929; lumber (Northern Hardwoods, bd. ft. July) only 6,173,000 as compared with 14,363,000 for 1930; and cement (bbls. Sept.) 12,092,000 compared with 16,124,000 for 1930 and 17,223,000 for 1929. In only four of the ten basic industries is an improvement shown in the figures, namely gasoline (bbls. August) 39,283,000 as compared with 37,844,000 for 1930, and 38,510,000 for 1929; pneumatic tires (no. July) 3,941,000 compared with 3,193,000 for 1930 and 4,856,000 for 1929; boots and shoes (pairs, August) 33,444,135 compared with 28,429,243 for 1930, and 36,444,971 for 1929; and cotton consumption (bales, August) 425,819 compared with 352,335 for 1930, and 545,649 for 1929. In practically all of the aforementioned instances, judging from subsequent newspaper accounts and surveys, the course of production has shown no noteworthy improvement during the last quarter of the year. Production in other leading industries, comparing November, 1931 with November, 1930, (Babson's *Reports*) shows the following declines: anthracite coal 20 per cent, coke 40

ECONOMIC AND BUSINESS CONDITIONS

per cent, electric power about 5 per cent, sugar meltings 38 per cent, and the wholesale industrial index about 18 per cent.

RESUMÉ OF OTHER LEADING INDICES OF TRADE

New Capital Financing.—A brief resumé of the leading indices of trade for the major part of 1931, aside from the financial and security market indices already referred to in another section of *THE AMERICAN YEAR BOOK*, will also serve to show that, with few exceptions, business conditions during the first nine months of 1931 were far below normal. New capital financing for the first nine months of the year totals only \$1,628,950,773, as compared with \$4,474,761,601 for the corresponding period of 1930, and \$7,466,588,928 for the same months of 1929.

Exports and Imports.—Exports of merchandise during the first nine months of the present year were only \$1,842,511,000 as compared with \$2,952,451,000 during the same period of 1930 (a decrease of nearly 37½ per cent), and with \$3,843,676,000 for the same months of 1929. In the case of imports of merchandise there was also a severe slump, the first nine months total being only \$1,619,281,000, as compared with \$2,401,312,000 for the corresponding period of 1930 (a decrease of over 32 per cent), and with \$3,360,017,000 in 1929.

Pig Iron production for 1931 (nine months) totals only 15,096,000 tons, compared with 25,702,000 and 32,678,000 for the corresponding periods of 1930 and 1929, or decreases respectively of 41 and 54 per cent.

Railway Earnings.—Gross railway earnings also registered a severe decline for the first eight months (latest figures available), i.e. gross earnings were \$12,119 per mile in 1931 as against \$14,972 and \$17,369 for the same period of 1930 and 1929. For the same eight months net earnings per mile were \$2,748 for 1931 as contrasted with \$3,666 and \$5,070 for the same period in 1930 and 1929.

Business Failures.—Reference should also be made to the 1931 record of business failures. As com-

pared with 1930, the first nine months of 1931 show a considerable increase in the number of bankruptcies, namely 20,311, as contrasted with 18,726 for the same period of 1930, and 16,030 in 1929. Liabilities involved in such failures also show an enormous increase, namely \$940,726,488 for the first nine months of the year as against corresponding totals for 1930 and 1929 of \$587,945,429 and \$401,049,529.

DIVIDEND PAYMENTS

Last year's account explained that in only one important respect was there still a satisfactory showing, namely in dividend distributions. Industrial dividend payments (*Babson's Reports*), it was pointed out, were reported for the first ten months of 1930 at \$2,655,600,000 as compared with \$2,151,000,000 for the same period of 1929. Similarly, railroad and traction dividends for the first ten months of 1930 were reported at \$530,400,000 as compared with \$485,300,000 for the same months of 1929. This unusual showing was attributed to the general policy of all corporations to accumulate satisfactory surplus accounts during the prosperous years to regularize and maintain dividends during lean periods. In fact, such surplus accumulation may justly be called insurance to meet business reverses. Surplus accounts really constitute owner's insurance, or dividend insurance, and show the wisdom of business managements in holding back from shareholders a substantial portion of current earnings during the surplus years. During 1931, however, owing to the continued and increasingly severe depression, this barometer has also begun to slide, although the showing is still extraordinarily good. During the first ten months of 1931 (*Babson's Reports*), industrial dividend payments aggregated \$2,336,900,000 as against \$2,655,600,000 for the same months of 1930, a decline of less than 12 per cent. Railroad and traction dividends for the first ten months of 1931 stood at \$475,000,000 as against \$530,400,000 for the same period of 1930, a decline of only 10½

X. BUSINESS AND FINANCE

per cent. It is difficult to tell what the future may hold in store, but it is reasonable to believe that one of the lessons derived by business managers from this severe business depression is likely to be the wisdom of increasing surplus (insurance) reserves even more in the next period of prosperity.

INDEX NUMBERS

In last year's discussion attention was called to the declining tendency in commodity prices, and the causes thereof. This year's tendency is similar, if we may judge from Bradstreet's *Index* of wholesale prices, and the decline has been about the same in amount as that experienced during 1930. For 1930 this *Index* Number averaged only 10.7454, as compared with 12.6685 for 1929, or a decrease of 15.2 per cent. The

present year's *Index* Number of 8.76 should be compared with 10.74 for 1930, showing another decline of nearly 18.5 per cent. It is also interesting to note that the 1930 *Index* Number of 8.76 is somewhat smaller than the figure reported for 1914, the pre-war year (8.99). A similar tendency is also to be noted with respect to outstanding wholesale commodities. Thus, on the basis of Babson's *Index* Number of wholesale prices covering the basic commodities of hides and leather, print cloth, petroleum, iron and steel, rubber, paper, wool, building materials, non-ferrous metals, and bituminous coal, the average price level for 1931 (first nine months) stood at 106, as compared with the corresponding averages of 135 for 1930, 150 for 1929, 155 for 1928, 155 for 1927, and 174 for 1926.

INDEX NUMBERS

(Source of data—Babson's *Statistical Reports*)

	U. S. Dept. of Labor		Babson		U. K. Board of Trade	
	1930	1931	1930	1931	1930	1931
January.....	93.4	77.0	141	120	78.8	64.3
February.....	92.1	75.5	138	118	76.9	63.9
March.....	90.8	74.5	136	111	74.9	63.7
April.....	90.7	73.3	136	108	74.4	63.6
May.....	89.1	71.3	134	104	73.3	62.8
June.....	86.8	70.0	133	96	72.6	62.1
July.....	84.0	70.0	133	97	71.7	61.5
August.....	84.0	70.2	132	100	70.8	59.9
September.....	84.2	69.1	132	102	69.5	59.7
October.....	82.6		131		68.0	
November.....	80.4		123		67.4	
December.....	78.4		122		65.5	

YEARLY AVERAGE

Bradstreet

1902.....	7.88
1903.....	7.94
1904.....	7.92
1905.....	8.09
1906.....	8.41
1907.....	8.90
1908.....	8.00
1909.....	8.51
1910.....	8.98
1911.....	8.7129
1912.....	9.1867
1913.....	9.2115
1914.....	8.9985
1915.....	9.8531
1916.....	11.8236
1917.....	15.6385
1918.....	18.7117
1919.....	18.6642

1920.....	18.8096
1921.....	11.3695
1922.....	12.1186
1923.....	13.4028
1924.....	12.8672
1925.....	13.9445
1926.....	13.0207
1927.....	12.7788
1928.....	13.2824
1929.....	12.6685
1930.....	10.7450
1931.....	8.76

EMPLOYMENT

As regards the price volume of labor there is also a decided decline as compared with 1930, as far as the first three-quarters of the year are concerned. For September of 1931

ECONOMIC AND BUSINESS CONDITIONS

the report of the New York State Department of Labor for manufacturing establishments in New York State places employment conditions at 74 and payroll conditions at 67, whereas for the corresponding month of 1930 these figures stood respectively at 85 and 85, and for 1929 at 100 and 106. Averaged for the first nine months, the 1931 figures stand at 75 and 69, as contrasted with 88 and 89 for the corresponding period of 1930, and 98 and 102 for 1929. Wage reduction seems to be the most discussed subject of the day, many believing that wages and retail prices are the two remaining important factors which have not yet been adequately liquidated. In its January 2 issue of *Business Conditions Weekly*, the Bureau of Business Conditions of the Alexander Hamilton Institute summarizes the situation as follows: "Factory payrolls in November, according to the Bureau of Labor Statistics, decreased 5 per cent from October and 25.3 per cent from November, 1930. While the trend is generally downward in No-

vember, the decrease this year was greater than the usual decline of slightly more than 3 per cent. The severity of the drop, however, was attributable in part to the numerous wage cuts that occurred during the month. Owing to the continuation of this policy of wage reductions in December, a further drop in the payroll index is expected as against the usual upturn shown in previous years. Of the 54 major industries only 5 reported higher payrolls in November as against October."

CORPORATE FINANCING YEARLY TOTALS

	Capital	Refunding
1931.....	\$1,628,950,773*	\$ 785,590,700*
1930.....	4,944,403,166	528,875,877
1929.....	8,639,439,560	1,386,921,569
1928.....	6,079,602,416	1,738,274,615
1927.....	5,391,008,544	1,928,187,260
1926.....	4,357,002,720	942,550,970
1925.....	4,100,725,167	637,384,524
1924.....	3,322,295,764	516,275,300
1923.....	2,712,996,155	530,343,942

* For nine months.

CORPORATE FINANCING

(Source of data—Babson's Reports)

	1930		1931	
	Capital	Refunding	Capital	Refunding
January.....	\$629,082,554	\$73,096,000	\$399,848,279	\$180,858,000
February.....	468,573,502	27,635,500	74,250,944	13,975,000
March.....	630,889,863	15,436,500	269,029,300	132,199,200
April.....	628,444,371	51,258,750	267,471,188	189,206,500
May.....	864,042,218	63,334,218	169,360,000	81,230,000
June.....	445,363,199	67,315,250	131,342,790	121,575,000
July.....	402,280,500	26,481,000	115,069,750	40,864,000
August.....	121,515,774	68,350,000	46,197,122	5,800,000
September.....	284,569,620	62,317,000	156,381,400	19,883,000
October.....	151,148,292	62,646,877		
November.....	137,621,500	4,233,000		
December.....	180,871,773	6,772,000		

THE SECURITY AND MONEY MARKETS

By S. S. HUEBNER

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GENERAL CONDITIONS

Both stock and bond markets were most disappointing to security holders during all of 1931. The year extended tremendously the extraordinary market value depreciation of 1930. In fact, three successive new low averages were established during the year, namely, early in June, again early in December, and once more at the end of the year. Extraordinarily heavy liquidation occurred in the higher priced shares,—the so called “blue chips”—the shrinkage running into the billions. For illustrative purposes a group of thirteen of these outstanding stocks, each representing the world's largest corporation in its particular line of business, experienced a shrinkage of 37 per cent between Feb. 24 and the end of May, amounting in the aggregate to more than \$4,000,000,000 market value. Bond prices, as far as listed bonds on the New York Stock Exchange are concerned, also experienced a remarkable depreciation during the year, amounting to between \$11,000,000,000 and \$12,000,000,000.

With the exception of the expected and customary periodic upward reactions, the security market decline was gradual and continuous throughout the year. At no time did the market get out of hand, still less degenerate into a panic. Apparently the principal factor was forced liquidation by financial institutions and individuals, hard pressed to protect their less liquid assets such as real estate and mortgages, against the demands of depositors or creditors. Recuperative power seemed to be blocked at all times by a mass of distinctly bad news, such as an enormous number of dividend cuts and omissions, exceedingly poor earnings of outstanding railroad and industrial corporations, an extraordinary number of bank failures, and a very un-

settled foreign situation as regards prospective ability of many nations to meet the interest and principal of bonds distributed to American owners to the extent of billions. No type of security value seemed to be spared, and during the last six months of the year, extraordinary inroads were made into the price quotations of preferred stocks and underlying bonds of many standard corporations.

According to the New York Stock Exchange *Bulletin* (December, 1931), the total market value of all listed stocks on the New York Stock Exchange stood at \$67,478,138,151 in January of 1929. Subsequently this market value was greatly increased during the violent bull market of the first nine months of the year, culminating in September, 1929. Then followed the six weeks panic which wiped out all of that appreciation and some more. In January, 1930 the total market value of all New York Stock Exchange listed stocks stood at \$64,707,878,131. By December, 1930, the total had fallen by \$11,500,000,000 more, namely to \$53,311,859,703. In January 1931 the total stood at \$49,019,878,459. For December, 1931, the total had declined to \$31,105,267,133, or by nearly \$18,000,000,000, a truly extraordinary shrinkage. Really to grasp the situation, however, it is essential to bear in mind that the aforementioned figures pertain only to stocks listed on the New York Stock Exchange, whereas similar drastic liquidation also occurred on the Curb Exchange and all other security markets of the country.

VOLUME OF STOCK TRANSACTIONS

Despite the heavy liquidation of the year, the 1931 volume of stock market transactions was nevertheless considerably smaller than that of

1930, and very much smaller than during 1929. The year would indicate a great deal of forced liquidation, and at the same time an unwillingness of others to take on commitments. Toward the end of the year this tendency became pronounced and wide declines occurred in numerous stocks from day to day on exceptionally small sales. Shares sold on the New York Stock Exchange totalled only 576,800,000 for 1931, according to the latest newspaper accounts, as compared with 810,038,161 for 1930, 1,124,991,490 for 1929, 919,621,825 for 1928, 576,563,218 for 1927, 450,845,255 for 1926, and 317,000,000 for 1919 (the highest record of the preceding industrial cycle). But as compared with 1928 and preceding years, it should be noted that the number of shares listed for trading purposes has greatly increased through large additional listings as well as numerous "split-ups" of existing issues. On the New York Curb Market 1931 sales of shares totalled only 109,842,434, or less than half of the 1930 total of 222,268,045. The 1931 total may also be compared with sales of 473,770,970 shares during 1929, and 230,043,682 during 1928. Although smaller than the years 1930, 1929 and 1928, the 1931 New York Stock Exchange total exceeded that of 1926, the highest record up to that time, by nearly 58 per cent.

STOCK PRICES

Group Averages.—As in previous years, the movement of stock prices may be illustrated with Babson's composite price for different groups of selected stocks. Thus using his list of twenty representative stocks, the September, 1931 average high stood at only 68.52, as compared with 132.37 for the corresponding month of 1930, or a decline of over 48 per cent. For September, 1929 the monthly average stood at 189.11. For all of the first nine months of 1931 the average was 92.03, as compared with 145.45 for the corresponding months of 1930, 167.03 for 1929,

142.65 for 1928, 135.30 for 1927, 114.53 for 1926, 100.60 for 1925, and 74.34 for 1921.

Railroad Shares.—During 1929 railroad shares reached the highest monthly level during September, namely 189.11. Comparing this 1929 September average with the 1931 average of 68.52, it appears that railroad shares declined within two years by approximately 64 per cent. Since September, 1931 there has, however, been much further liquidation in railroad shares, two additional new low levels having been established, so that it may be said that the average price of railroad shares represents a wiping-out of at least three-fourths of the September, 1929 dollar valuation.

Industrial Shares.—In industrial stocks the decline in prices during 1931 has been about equally great, and this is also significant because of the unusual decline undergone by this group of shares during 1930 and the panic of 1929. Again taking Babson's composite prices for thirty leading representative industrial stocks for illustrative purposes, it appears that the September average high price for 1931 stood at only 140.13, as compared with 245.09 for the corresponding month of 1930, and 381.17 for 1929. This shows a decline of approximately 43 per cent since September, 1930, and 63 per cent since September, 1929. But again there has been much further liquidation in industrial shares since September, 1931. In view of the two successive new bottoms which have been established since that date, it may again be said that industrial shares have also shrunk by about three-fourths of their September 1929 market valuation. For the first nine months of 1931 the average high is 164.45 as compared with 266.17 for 1930, 338.90 for 1929, 219.41 for 1928, 173.87 in 1927, 156.67 in 1926, and 75.09 in 1921. The first nine months average of 1931 shows a decline of nearly 40 per cent as compared with the corresponding average of 1930, and over 51 per cent as compared with that of 1929.

Copper Shares.—A similar situation, although somewhat more violent in extent presents itself in the copper group. According to Babson's composite price for twenty leading and representative copper stocks, the average high price for September, 1931 stood at only 12.7 as compared with 28.2 for the corresponding month of 1930, (a decline of nearly 55 per cent), and with 80.7 for the same month in 1929, or a decline of over 84 per cent. Probably no important business has suffered more severely during the present business depression from overproduction as well as a decline in the market price of its commodity than has the copper mining and smelting business. For the first nine months of 1931, the average high price stood at only 18.3, as compared with 40.6 for 1930, 80.1 in 1929, 48.3 in 1928, 32.7 in 1927, 29.4 in 1926 and 25.5 in 1921. The first nine months average in 1931 shows a decline of 55 per cent over the similar period of 1930, and over 77 per cent as compared with 1929. However, following September of this year the market has undergone two additional declines. The Babson average for December 1931 was not available at the time of writing, but it is clear that the average price level of September has been carried materially lower.

Causes for Price Declines.—Concerning the cause of the aforementioned serious depreciation in all groups of stocks, we would only need to repeat last year's account in *THE AMERICAN YEAR BOOK*. Suffice it to say that the market decline is largely attributable to the accumulated mass of speculative error committed along many lines,—in real estate, manufacturing, commodity markets, security purchases, etc.—during the boom period of 1928 and 1929. According to last year's explanation, it was inevitable that a serious business convulsion should follow the violent stock market panic of October and November, 1929. That convulsion has now continued for two solid years, 1930-1931, and now stands

at the lowest point reached thus far. At present business activity is reported to be approximately 33 per cent below normal conditions. Practically all of the "sunshine philosophy," so widely disseminated during 1930, has disappeared. Ever so many prophets, accustomed to the ways of inspiring hope in suffering humanity, have lost their reputations. From the security market standpoint, the present recession is noteworthy in that seven successive new lows have been established since the bear market commenced in October, 1929, and today prices average only a few points above the last established low. The industrial depression may be said to have reached fully the proportions of the depression of 1893-96, and gives every appearance of constituting an all-round readjustment, not only in share values, but also in real estate, wholesale prices, rents, retail prices, and wages. At present the movement towards readjustment in retail prices and wages is very decided, and the completion of this liquidation may mark, as it so often has done in the past, the end of the industrial storm. Moreover, the business convulsion is not confined to any one country, but is decidedly world-wide. Practically everywhere the outstanding problem seems to be debt liquidation, and today the greatest fear prevails concerning the ability of many foreign nations to meet their indebtedness to the American government as well as to its citizens on private obligations.

BUSINESS AND THE SECURITY MARKET

During 1930 writers seemed chiefly concerned with the suddenness of the decline during the panic of 1929, and the subsequent months of 1930. This year, especially within the later months of the year, they have been concerned principally with the long-drawn-out nature of the bear movement in both business and the security market. Just as we witnessed the promulgation of a "new era" philosophy during 1929, so again we are wit-

nessing the promulgation of a "new era" philosophy in 1931. The idea is emphasized that there can be no improvement in the security market, unless there is an improvement in business. In other words the stock market is to follow business, rather than have business follow the stock market. Time will demonstrate that this new era philosophy is just as incorrect as was the one promulgated in 1929. In due course of time, after forced liquidation has been completed, we shall again experience a bull security market, and then subsequently in due course business will begin its revival. For the time being, however, business indicates a depreciation of approximately 33 per cent below normal, with the accompanying results of an enormous number of unemployed, an unusual absence of buying power which is being reflected in all markets, both security and commodity, an enormous decline in real estate values, as well as other forms of non-liquid assets, and a very insecure position of many financial institutions. During practically all of 1930, the continuous stock market may be said to have been compelled to be the shock absorber for all the non-liquid enterprises of the country. Being the only places which afford a ready market, our organized security markets are resorted to as the place of sale for the only assets which seem to have a ready market in a period of business deflation. The problem has been further accentuated by the enormous liquidation by foreigners of securities listed on our markets.

THE BOND MARKET

Bond sales on the New York Stock Exchange during 1931, according to latest newspaper accounts, totalled \$3,075,300,000, for 1930, \$2,779,100,000, for 1929, \$3,020,300,000, and for the year 1928, \$2,939,700,000. The 1931 price level for investment bonds judging from Babson's composite price of twenty leading representative

bonds, shows a very substantial depreciation as compared with the preceding year. The September 1931 average stood at 89.8, as compared with the corresponding average of 98.5 for 1930, or a decrease of nearly 9 per cent. For the first nine months of 1931, the average stood at 95.7 as compared with 95.8 for the corresponding average for 1930, 92.3 for 1929, 96.7 for 1928, 95.8 for 1927, 92.6 for 1926, 89.8 for 1925, 86.9 for 1924, 84.4 for 1923, 87 for 1922, 75.5 for 1921 and 73.4 for 1920.

The most outstanding feature of this year's bond market has been the enormous decline in foreign bonds held in this country, and the secondary bonds of American corporations. Very many of these bonds have degenerated into the highly speculative group, and many of the corporate issues are now selling on a receivership basis. To show the enormous depreciation in bonds reference may be made to the data furnished by the latest New York Stock Exchange *Bulletin* (December, 1931). The par value of all of the listed bonds on the New York Stock Exchange totalled \$50,072,879,897 on Jan. 1, 1931. By Dec. 1, 1931, this par value total had increased to \$52,547,476,192. Despite this increase of 2½ billions in the par value of listed bonds, the total market value decreased from \$47,384,803,889 in January, 1931 to only \$39,512,398,607 on Dec. 1, 1931. All American listed bonds increased in their par value during the first eleven months of the year from \$30,842,272,320 to \$33,450,652,694, while the market value of the same bonds decreased during the same period from \$29,579,079,710 to \$28,140,969,932. For all foreign listed bonds the par value remains substantially the same during the eleven months period, namely \$19,230,607,577 as compared with \$19,096,823,498. The total market value of these foreign bonds, however, shrank enormously, namely from \$17,805,726,178 to only \$11,371,428,675.

X. BUSINESS AND FINANCE

SECURITY MARKET PRICES

(Source of data—Babson's *Statistical Service*)

	20 Rep. R.R. Stocks		30 Rep. Ind. Stocks		20 Rep. Copper Stocks		20 Rep. Bonds	
	1930 High	1931 High	1930 High	1931 High	1930 Ave.	1931 Ave.	1930 Ave.	1931 Ave.
January.....	148.86	109.55	267.14	173.04	50.6	20.4	94.4	98.0
February.....	156.26	111.58	272.27	194.36	51.3	22.7	94.2	97.8
March.....	157.94	107.13	286.19	187.72	50.8	23.1	95.5	97.8
April.....	157.02	95.82	294.07	172.43	45.9	20.4	95.1	97.0
May.....	145.31	87.01	275.07	154.41	39.3	17.0	95.2	95.8
June.....	143.73	88.31	274.45	156.93	35.0	16.3	95.7	95.9
July.....	135.46	86.13	240.81	155.26	32.9	16.6	96.5	96.2
August.....	132.06	74.19	240.42	145.80	31.2	15.5	97.5	92.9
September.....	132.73	68.52	245.09	140.13	28.2	12.7	98.5	89.8
October.....	124.06	....	214.18	....	23.2	....	98.4	....
November.....	113.19	....	190.30	....	23.4	....	97.1	....
December.....	107.16	....	186.82	....	20.8	....	95.4	....

SHARES TRADED ON THE NEW YORK STOCK EXCHANGE

	1930	1931
January.....	62,308,290	42,503,382
February.....	67,834,100	64,181,836
March.....	96,552,040	65,658,034
April.....	111,041,000	54,346,836
May.....	78,340,030	46,659,525
June.....	76,593,250	58,643,847
July.....	47,746,090	33,545,650
August.....	39,869,500	24,828,500
September.....	53,545,145	51,040,168
October.....	65,497,479	....
November.....	51,946,840	....
December.....	58,764,397	....

YEARLY TOTALS

	Shares of Stock
1919.....	316,787,725
1920.....	226,640,400
1921.....	172,712,716
1922.....	258,652,519
1923.....	236,115,040
1924.....	281,991,597
1925.....	454,404,733
1926.....	450,845,255
1927.....	576,563,218
1928.....	919,661,825
1929.....	1,124,991,490
1930.....	810,038,161
1931.....	441,407,778*

* Total for first nine months only.

THE MONEY MARKET

With respect to both time and call loan rates, the prevailing tendency during 1931 was similar to that experienced for 1930. Starting with a

January average of $2\frac{7}{8}$ per cent for commercial paper rates and $1\frac{1}{8}$ per cent for call loans in New York, the average monthly rates remained at substantially these low levels, month by month, with a slightly declining tendency, until for September of this year they stood respectively at $1\frac{1}{8}$ and $1\frac{1}{2}$ per cent. These rates compare with $4\frac{7}{8}$ and $4\frac{3}{4}$ per cent for January of 1930. They also offer a strange contrast to the average monthly rate of $9\frac{1}{8}$ per cent for call loans during the prosperous period of May and June of 1929. These months, it will be recalled, witnessed the unprecedented bull stock market of 1929.

During the first nine months of 1931 both time and call rates, as already stated, showed a gradually declining tendency. The January averages for time and demand loans (Babson's figures) stood at $2\frac{7}{8}$ and $1\frac{1}{8}$ per cent, as compared with $4\frac{7}{8}$ and $4\frac{3}{4}$ per cent for the corresponding month of 1930, and $5\frac{1}{2}$ and $7\frac{1}{2}$ per cent for 1929. For September, 1931, the two rates stood at $2\frac{7}{8}$ and $1\frac{1}{2}$ per cent as compared with 3 and $2\frac{1}{4}$ per cent for 1930 and $6\frac{1}{8}$ and $8\frac{1}{2}$ per cent for 1929. For the first nine months of 1931 the average commercial paper rate (Babson's figures) was $2\frac{1}{2}$ per cent as compared with $3\frac{3}{4}$ per cent for the corresponding months of 1930, and $5\frac{7}{8}$ per cent for 1929. For demand loans in New

VOLUME OF BANKING TRANSACTIONS

York the first nine months average for 1931 stands at only $1\frac{1}{2}$ per cent, as compared with $3\frac{1}{4}$ per cent for the corresponding months of 1930, and $8\frac{1}{4}$ per cent for 1929.

According to the New York Stock Exchange *Bulletin* (December, 1931) the volume of call loans decreased enormously during the year. On Jan. 1, 1931, these loans stood at only \$1,519,400,054 as compared with

\$3,376,420,785 for Jan. 1, 1930, and \$5,722,258,724 on Jan. 1, 1929. From Jan. 1, 1931, there was almost a constant monthly decrease, until Dec. 1, 1931, when the total stood at only \$599,919,108, or only about 40 per cent of the total on Jan. 1 of the year. Time loans are also reported as having declined during the year from \$374,212,835 on January 1 to \$130,232,800 on Dec. 1.

MONEY RATES

(Source of data—Babson's *Statistical Service*)

	Average Time and Call Rates in New York City				Average Bank Rates—Eng- land, France and Germany		Gold Movements	
	1930		1931		1930	1931	1930	1931
	Dom.	Call	Dom.	Call				
January.....	$4\frac{7}{8}$	$4\frac{3}{4}$	$2\frac{7}{8}$	$1\frac{5}{8}$	$5\frac{1}{8}$	$3\frac{1}{8}$	\$ 3,960,000	\$34,372,000
February.....	$4\frac{5}{8}$	$4\frac{1}{4}$	$2\frac{1}{2}$	$1\frac{1}{2}$	$4\frac{1}{2}$	$3\frac{1}{8}$	59,991,000	16,142,000
March.....	$4\frac{1}{8}$	$3\frac{3}{4}$	$2\frac{1}{2}$	$1\frac{3}{4}$	$4\frac{1}{8}$	$3\frac{1}{4}$	55,478,000	25,645,000
April.....	$3\frac{7}{8}$	$3\frac{7}{8}$	$2\frac{1}{2}$	$1\frac{1}{8}$	$3\frac{7}{8}$	$3\frac{1}{8}$	65,725,000	49,516,000
May.....	$3\frac{3}{4}$	3	$2\frac{1}{2}$	$1\frac{1}{2}$	$3\frac{3}{4}$	$3\frac{1}{4}$	23,470,000	49,630,000
June.....	$3\frac{3}{8}$	$2\frac{1}{2}$	$2\frac{1}{8}$	$1\frac{1}{2}$	$3\frac{3}{4}$	$3\frac{1}{2}$	13,912,000	63,847,000
July.....	$3\frac{1}{8}$	$2\frac{1}{4}$	2	$1\frac{1}{2}$	$3\frac{1}{4}$	$4\frac{3}{8}$	19,640,000*	19,488,000
August.....	3	$2\frac{1}{8}$	$1\frac{7}{8}$	$1\frac{1}{2}$	$3\frac{1}{4}$	$6\frac{1}{8}$	19,618,000*	57,500,000
September.....	3	$2\frac{1}{4}$	$1\frac{5}{8}$	$1\frac{1}{2}$	$3\frac{1}{4}$	$5\frac{1}{2}$	2,547,000	20,532,000
October.....	3	2	...	...	$3\frac{3}{8}$	...	26,369,000	....
November.....	3	2	...	...	$3\frac{1}{2}$	...	35,151,000	....
December.....	$2\frac{1}{8}$	$2\frac{1}{2}$	$3\frac{1}{2}$...	32,742,000

* Exports exceed Imports.

VOLUME OF BANKING TRANSACTIONS

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TOTAL CHECK TRANSACTIONS

As explained in previous issues of THE AMERICAN YEAR BOOK, check transactions constitute an excellent barometer of national business conditions, since the published record is sufficiently frequent as well as nationally comprehensive. Although the 1930 record reflected an unusual degree of business adversity, the figures for 1931 clearly indicate a further substantial decline. For the first nine months of 1931 (using the figures of Babson's *Reports on Fun-*

damental Conditions) check transactions amounted to only \$403,066,376,000, as compared with \$544,172,957,000 for the corresponding period of 1930, or a decline of \$141,100,000,000, or nearly 26 per cent. This decline it should be noted, followed a decline of 25 per cent during the first nine months of 1930, as compared with the corresponding period of 1929. For the first nine months the 1931 total of 403 billions compares with corresponding totals of 725 billions for 1929, 611 billions for 1928, 522 bil-

X. BUSINESS AND FINANCE

lions for 1927, 481 billions for 1926, and 440 billions, 380 billions, 366 billions, and 329 billions, respectively, for the years 1925, 1924, 1923, and 1922. Whereas the 1930 figure was lower than that of the corresponding period of 1929 by 181 billions, or approximately 23 per cent, it is significant that this year's total is smaller than that of 1929 (the boom year of the present cycle) by 322 billions, or over 44 per cent. As compared with the last depression year of the previous business depression, namely 1921, the total for the first nine months of 1931 is larger by 105 billions. But allowance must be made for at least three important factors, namely, the normal increase in the nation's business development, the increased use of clearing facilities, and to some extent the greater speculative activity on the nation's leading security and commodity exchanges.

CHECK TRANSACTIONS IN NEW YORK CITY

Previous issues of THE AMERICAN YEAR BOOK have explained the importance of New York City as the nation's principal center of speculative activity in the security market, as well as in many of the leading organized commodity exchange markets. It is, therefore, important to note the volume of check transactions for New York, in contrast to the figures for the rest of the country. For the first nine months of the present year New York check transactions totalled \$209,469,715,000, or 16 billions (approximately 8.3 per cent) in excess of the total for the rest of the country. As compared with 1930 New York City check transactions for 1931 (first nine months) decreased by nearly 91 billions, while the decrease for the rest of the country, exclusive of New York, was only 50 billions. This disproportionate decrease in New York, as compared with the rest of the country, reflects in large part the substantial decline of transactions upon the speculative markets. Thus shares traded in upon the New York Stock Exchange aggregated a total of only 441 millions

during the first nine months of the year, as compared with 634 millions during the corresponding period of 1930 and 827 millions during the same period in 1929.

CHECK TRANSACTIONS OUTSIDE NEW YORK CITY

Exclusive of New York City, the 1931 nine months total of the nation stands at only \$193,596,661,000 as compared with \$243,805,401,000 for the corresponding period of 1930, or a decrease of \$50,208,740,000 or nearly 21 per cent. This large decline, moreover, it should be noted, has followed a corresponding decline of nearly 14 per cent during the previous year. The 1931 total, therefore, exclusive of New York City, again indicates clearly the appalling retrogression of business conditions. This is especially noteworthy when allowance is made for the normal growth in the nation's volume of business as well as the normal increase in the use of checking facilities. When allowance is made for these factors, the extent of the business decline during 1931 is really greater than that indicated by the aforementioned decline of 21 per cent.

December figures (as published by the *Commercial and Financial Chronicle*) give no indication of any improvement during the last month of the year. For the week ended Dec. 19, clearings for the various Federal

CHECK TRANSACTIONS YEARLY TOTALS

	Exclusive of New York	Inclusive of New York
1931.....	\$193,596,661*	\$403,066,376*
1930.....	319,406,769	703,046,254
1929.....	378,568,727	982,716,090
1928.....	348,897,402	850,200,685
1927.....	323,164,467	714,722,361
1926.....	309,363,401	648,418,649
1925.....	292,394,131	605,760,384
1924.....	260,310,695	523,957,472
1923.....	256,556,999	495,097,836
1922.....	222,152,058	463,987,457
1921.....	199,087,442	405,976,001
1920.....	242,069,771	484,500,290
1919.....	210,547,763	457,970,614

* Total for first nine months only.

FOREIGN TRADE

Reserve districts show the following decreases as compared with the corresponding week of 1930: Boston district (12 cities), 29.3%; New York (12 cities), 23.3%; Philadelphia (10 cities), 32%; Cleveland (8 cities), 39.1%; Richmond (6 cities), 21.6%; Atlanta (12 cities), 24.7%; Chicago (20 cities), 35.5%; St. Louis (7 cities), 26.7%; Minneapolis (7 cities), 20.3%; Kansas City (10 cities), 31.2%; Dallas (5 cities), 14.4%; San Fran-

cisco (14 cities), 27.4%. For the 123 cities represented in the aforementioned publication, inclusive of the City of New York, the decline is 28.5%, as compared with the corresponding week of last year. With New York excluded, the decline is 30.5%. The predominant importance of New York should also be noted, that city's total of \$5,285,356,241 for the week comparing with \$2,513,031,-553 for all of the balance of the cities.

CHECK TRANSACTIONS

(Source of data—Babson's *Reports*)

(in billions)

	Exclusive of New York		Inclusive of New York	
	1930	1931	1930	1931
January.....	\$29,553,303	\$25,051,438	\$64,284,808	\$49,607,967
February.....	24,645,999	19,685,084	55,762,828	40,632,817
March.....	23,530,234	22,405,690	69,270,115	49,995,126
April.....	27,942,315	22,637,707	66,573,532	49,458,406
May.....	27,934,166	21,712,517	65,356,958	46,784,290
June.....	28,266,461	22,426,704	65,956,816	48,329,500
July.....	26,594,825	21,332,844	56,194,769	42,339,573
August.....	23,959,975	19,048,619	49,011,905	36,549,372
September.....	24,378,123	19,296,058	51,761,226	39,369,325
October.....	27,183,057	.....	57,964,057	.....
November.....	22,645,562	.....	45,135,884	.....
December.....	25,772,749	.....	55,773,356	.....

FOREIGN TRADE

BY ROLAND L. KRAMER

PROFESSOR, UNIVERSITY OF PENNSYLVANIA

EXPORT AND IMPORT DECLINE

Post-war Low Record.—Foreign trade in the fiscal year ended June 30, 1931 exhibited a marked recession from the decline that set in during the preceding fiscal year. Exports of merchandise, including foreign, totaled \$3,084,000,000 as compared with \$4,694,000,000 for 1929-30, a decline of 34 per cent. Imports of merchandise declined to \$2,432,000,000, a drop of 37 per cent from the \$3,849,000,000 mark set in 1929-30. Total merchandise foreign trade of the United States for the fiscal year 1930-31 thus aggregated \$5,516,000,-

000, the lowest it has recorded since 1915.

Value and Volume.—The shrinkage of foreign trade reflects the world-wide economic situation, as to both lowered price and lessened volume of business. The United States Department of Commerce estimates that the average price of exports in 1930-31 was 16 per cent below the price level of the preceding year, while import prices showed a decline of 24 per cent. Taking these price reductions into consideration, the department estimates the 1930-31 decline of exports, on a quantity basis,

X. BUSINESS AND FINANCE

to be 22 per cent, as compared with 34 per cent on a value basis. Similarly, imports exhibit a quantity decline of only 17 per cent as contrasted with a drop of 37 per cent in value. The department makes the significant observation that "this recession in foreign trade during the last fiscal year was about the same as the decline in domestic business activity, the Federal Reserve Board's index of industrial production showing a drop of 20 per cent."

Balance of Trade.—With the relatively proportionate decline in both exports and imports of merchandise,

the balance of trade in 1930-31 amounted to \$651,000,000. Gold continued to flow toward the United States, the net import of the metal being \$297,000,000, the largest net receipt for seven years. Silver again showed a net export, the figure standing at \$5,000,000. Foreign investments, the principal invisible item in our trade and acting the rôle of an import, dwindled nearly 50 per cent from the preceding year. During the current period, new foreign security issues floated in the United States were gross \$551,366,500 and net \$415,311,440.

MERCHANDISE EXPORTS, IMPORTS, AND BALANCE OF TRADE, YEARS ENDED JUNE 30

[Millions of Dollars]

Period	Merchandise				Excess of Exports (+) or Imports (—)		
	Exports		Total Imports	Per Cent Imports Are of Exports	Mer- chandise	Gold	Silver
	Total	United States Mer- chandise					
1910-14.....	2,166	2,130	1,689	78.0	+ 477	+ 17	+20
1922-26.....	4,332	4,248	3,646	84.2	+ 685	+213	+14
1927-31.....	4,599	4,515	3,795	82.5	+ 805	+ 65	+16
1921-22.....	3,771	3,700	2,608	69.2	+1,163	-441	- 8
1922-23.....	3,957	3,887	3,781	95.6	+ 176	-235	- 9
1923-24.....	4,312	4,224	3,554	82.4	+ 758	-407	+19
1924-25.....	4,865	4,778	3,824	78.6	+1,040	+115	+37
1925-26.....	4,753	4,653	4,465	93.9	+ 289	- 97	+29
1926-27.....	4,968	4,867	4,252	85.6	+ 716	-148	+21
1927-28.....	4,877	4,773	4,147	85.0	+ 730	+498	+20
1928-29.....	5,373	5,284	4,292	79.9	+1,082	-155	+17
1929-30.....	4,694	4,618	3,849	82.0	+ 845	-213	+18
1930-31.....	3,084	3,032	2,432	78.9	+ 651	-297	+ 5

FOREIGN TRADE

FOREIGN TRADE BY ECONOMIC CLASSES, YEARS ENDING JUNE 30

(Millions of dollars)

Period	Total	Crude Materials	Crude Foodstuffs	Manu- factured Foodstuffs	Semi- Manu- factures	Finished Manu- factures
<i>Exports</i>						
1910-14.....	\$2130	\$ 713	\$127	\$295	\$342	\$ 654
1920-30.....	4618	1031	218	440	636	2293
1930-31.....	3033	725	159	298	405	1446
<i>Imports</i>						
1910-1914.....	1689	595	203	194	307	389
1929-30.....	3849	1309	479	358	785	918
1930-31.....	2432	765	349	242	454	623
<i>Exports</i>	%	%	%	%	%	%
1910-14.....	100	33.5	5.9	13.8	16.0	30.8
1929-30.....	100	22.4	4.7	9.5	13.8	49.6
1930-31.....	100	23.9	5.3	9.8	13.3	47.7
<i>Imports</i>						
1910-14.....	100	35.2	12.0	11.5	18.2	23.1
1929-30.....	100	34.0	12.5	9.3	20.4	23.8
1930-31.....	100	31.5	14.3	9.9	18.7	25.6

ANALYSIS OF EXPORT TRADE

Finished Manufactures.—In the export trade, finished manufactures continued the leading group, its share being smaller than that of the preceding year but remaining at a substantial margin over the next largest group. Machinery of all kinds maintained its leadership of finished manufactures and again was the second largest individual export. The \$402,000,000 of machinery exported in 1930-31 was 33 1/3 per cent below the value of machinery exported in the preceding year. Among the machinery items, agricultural implements suffered the greatest decline, *viz.*, 41 per cent, while industrial machinery shrunk 36 per cent and electrical apparatus 24 per cent. Refined mineral oils aggregated \$324,700,000, representing the third largest export and the second in the group of finished manufactures. This figure was approximately 34 per cent below the value of refined oil exported in 1929-30 but only 21 per cent lower in quantity. Automobiles, parts and accessories, the fourth largest export item and the third among the group of finished manufactures, registered a large reduction of 51 per cent, declining from \$383,100,000 in 1929-30 to \$188,600,000. Passenger cars and

trucks alone declined to \$100,400,000 as compared with \$244,200,000 in 1929-30, representing a recession of 57 per cent in value and a quantity decline amounting almost to 60 per cent. Every important article in the group of finished manufactures contributed to the general decline. In some articles, such as automobiles, machinery and advanced iron and steel products, the decline in quantity was approximately commensurate with the shrinkage in value, indicating a fair maintenance of unit prices. In other cases—refined mineral oils, cotton manufactures and, to a smaller extent, rubber manufactures, unit price declines accounted for a considerable share of the fall in reported value.

Crude Materials.—The second largest group of exports,—crude materials—with 23.9 per cent of United States exports, showed a slight relative improvement over the 22.4 per cent of the preceding year but continued the decline of this group from the pre-war average of 33.5 per cent. Raw cotton maintained its position not only as the leading raw material export but also the chief individual export, with a reported value of \$424,600,000. The supremacy of raw cotton in the export trade was threat-

ened, however, by its sharp price decline. With only a fractional reduction in quantity, cotton suffered a drop of 37 per cent in value from the level of the preceding year. No important item in the export trade was more seriously affected by recent price declines. The second largest crude material export, unmanufactured tobacco, was buoyed by a comparative price maintenance, recording an approximate drop of only 4 per cent in value to \$142,300,000 with a quantity decline of $1\frac{1}{2}$ per cent. Crude oil exports valued at \$26,300,000 represented a shrinkage of 35 per cent, with a decline of 13 per cent in quantity. Coal and coke with a reported value of \$79,300,000 receded $22\frac{1}{2}$ per cent from the \$102,200,000 of the preceding year, and the quantity reduction amounted to 20 per cent.

Semi-manufactures, the third group of exports, was fractionally lower in relative importance. Iron and steel mill products declined 50 per cent in tonnage but only 47 per cent in value to \$94,000,000. Chemicals and related products were down 24 per cent to \$64,500,000. Copper with a quantity recession of only 5 per cent, was forced by price declines to \$83,600,000, 40 per cent below the value of the preceding year. Exports of boards and timber were 32 per cent less in quantity and with a value of \$57,800,000 were 42 per cent below the figure of the preceding year. Leather was off nearly 25 per cent.

Crude foodstuffs advanced nearly 2 per cent in relative importance, but in accordance with the general decline were 27 per cent below the values reported in the preceding fiscal year. Wheat was affected in a particularly adverse manner by commodity price reductions. The value of wheat exports, \$66,300,000, was 42 per cent below the figure of the preceding year while the quantity exported was only 18 per cent less. Other grains were similarly affected. In the face of general declines, fruits and nuts increased 9 per cent in value to \$120,600,000. Most of the increase was attributed to greater shipments of apples and of evaporated fruits.

Manufactured foodstuffs, with 9.8 per cent of the 1930-31 export trade, were of slightly greater relative significance as compared with the preceding year. Animal fats and oils, mostly lard, fell 21 per cent in quantity and 33 per cent in value, registering \$73,800,000. Prices of meat products were better maintained and the quantity drop of 33 per cent involved a decline of only 38 per cent in value to \$47,200,000. Wheat flour at \$52,000,000, was nearly as important as grain, but declined 32 per cent from the preceding year. However, on a quantity basis, flour exports fell off only 8 per cent.

ANALYSIS OF IMPORT TRADE

Industrial crude materials, continuing as the leading group of imports, not only shared the general decline in foreign trade but also dropped from 34 per cent to 31.5 per cent of total imports. Raw silk remained the most important individual import as well as the first crude material. World price recessions brought silk, in the face of a quantity increase of 5 per cent, from \$356,200,000 in 1929-30 to \$225,700,000, a decline of 36 per cent. Crude rubber decreased 9 per cent in tonnage received and 51 per cent in value, imports being recorded as \$94,200,000. Hides and skins retained the same unit value as the preceding year and declined 53 per cent in both quantity and value, to \$60,700,000. Imports of crude oil shrunk nearly 14 per cent in quantity and approximately 20 per cent in value, the 1930-31 figure being \$55,900,000. The quantity of unmanufactured tobacco imported increased nearly 20 per cent but the corresponding value, \$37,700,000, was a recession of more than 20 per cent from the preceding year. Oilseeds declined more than 28 per cent in volume and 50 per cent in value, to \$34,100,000, another evidence of the downward movement of commodity prices during the year. Wool and mohair, at \$24,400,000, showed a decline of 60 per cent with a fall in tonnage of only 32 per cent.

Finished Manufactures.—Although finished manufactures, the sec-

ond group of imports, were valued at 32 per cent below the figure set in 1929-30, they increased in their share of total imports from 23.8 per cent to 25.6 per cent. Newsprint, the leader of the group and the third largest individual import, was fairly well maintained in price, as compared with the heavy drop in the unit price of raw silk, the chief import. Receipts of newsprint were 10 per cent below the preceding year in volume, a decline of only 13 per cent in value, to \$123,700,000. Refined petroleum, the second largest imported finished manufacture, was reported at the same value as in 1929-30, *viz.*, \$68,200,000, with an increase in volume of 1,000,000 barrels. Art works, at \$57,400,000 were 22 per cent below the preceding year. Burlap receipts were 23 per cent less in volume and with a value of \$36,500,000 were nearly 45 per cent lower than the preceding year. Cotton manufactures, at \$38,000,000, declined nearly 37 per cent and wool manufactures, with a reported value of \$25,900,000 were nearly 60 per cent under 1929-30. Manufactures of flax, hemp and ramie were down nearly 35 per cent to \$27,600,000, and manufactures of leather, at \$24,000,000 declined almost 44 per cent.

Semi-manufactures, valued at \$454,000,000, represented 18.7 per cent of total imports as compared with 20.4 per cent. in 1929-30. Chemicals, having displaced copper as the leading item in the group, receded nearly 30 per cent in value to \$93,000,000. Fertilizers, the chief sub-group under chemicals, were valued at \$49,700,000, a drop of 27 per cent in quantity as well as in value. Paper base stocks, chiefly wood pulp, were purchased to the extent of \$86,800,000 compared with \$118,600,000 in the preceding year. Wood pulp alone was recorded at \$68,000,000 a drop of 23½ per cent with a corresponding reduction in tonnage of only 15½ per cent. Copper suffered a decline of 55 per cent, to \$64,100,000 while the tonnage imported was only 31 per cent less than in the preceding year. Expressed vegetable oils and fats some of which are classed as foodstuffs, shrunk from \$85,500,000 to \$61,400,000, a reduction

of more than 28 per cent, while the quantity received declined only about 5 per cent. Furs were off nearly 30 per cent to \$60,900,000 and tin at \$44,600,000 registered recessions of 42 per cent in value and of only 12 per cent in volume. A thirty per cent reduction was recorded in diamonds, at imports of \$27,100,000, representing a quantity decline of only 14 per cent, while sawmill products, at \$26,800,000 were off nearly 44 per cent.

Crude foodstuffs, with 14.3 per cent of total imports, were of slightly greater relative significance than in 1929-30. Coffee, the second individual import, increased 11 per cent in volume, reaching a record tonnage, but due to a decline of 31 per cent in the average price of coffee, the value reported was only \$192,800,000, a drop of 25 per cent from the preceding year. Fruits and nuts, at \$65,000,000, were off nearly 24 per cent, while cocoa, with a quantitative shrinkage of less than 2 per cent, showed a reduction of 30 per cent in value.

Manufactured Foodstuffs.—Cane sugar, constituting nearly one-half of the group of manufactured foodstuffs, was valued at \$112,200,000, a drop of nearly 30 per cent while the quantity of sugar imports receded less than 10 per cent from the preceding year. Vegetables and preparations, at \$28,300,000, were off 33 per cent and meat products fell nearly 60 per cent in value to \$15,000,000 with a quantity decline of 70 per cent.

FOREIGN MARKETS

Europe continued as the leading market for United States merchandise, taking nearly 50 per cent, or \$1,523,000,000 of our exports, compared with 46.3 per cent of the 1929-30 total. The decline in exports to Europe amounted to 30 per cent, which is less than the average export drop of 34 per cent. The United Kingdom regained the leadership of foreign markets for American exports, taking \$566,400,000 worth of our goods or 18 per cent of total exports. Germany was the third foreign market with \$234,600,000 of purchases, France was fourth with \$186,-

X. BUSINESS AND FINANCE

000,000, and Soviet Russia sixth with \$106,700,000. Of all the European trade probably the most significant feature is the establishment of the Soviet Union at so high a position in our list of foreign markets. Exports to this country showed a decline of only 14 per cent from the preceding year. In contrast, exports as indicated above to the United Kingdom and to France represent a drop of approximately 27 per cent from the 1929-30 figure, while German sales recorded a shrinkage of 36 per cent.

FOREIGN MERCHANDISE TRADE BY CONTINENTS, YEARS ENDED JUNE 30

[Millions of dollars]

Period	Total	Northern North America	Southern North America	South America	Europe	Asia	Oceania	Africa
<i>Exports of United States Merchandise</i>								
1910-14.....	2,166	320	181	121	1,350	121	48	25
1922-26.....	4,332	639	420	302	2,253	502	146	69
1927-31.....	4,599	806	381	425	2,162	558	161	106
1921-22.....	3,771	551	345	191	2,048	500	84	52
1922-23.....	3,957	666	380	259	2,029	443	122	59
1923-24.....	4,312	611	432	281	2,200	565	157	65
1924-25.....	4,865	658	485	360	2,656	461	167	77
1925-26.....	4,753	708	459	420	2,331	540	201	94
1926-27.....	4,968	797	417	452	2,394	587	216	106
1927-28.....	4,877	871	395	436	2,322	568	174	111
1928-29.....	5,373	999	419	551	2,397	686	193	129
1929-30.....	4,694	830	412	437	2,173	566	160	116
1930-31.....	3,084	530	264	247	1,523	385	64	71
<i>Imports</i>								
1910-14.....	1,689	119	229	207	836	259	17	23
1922-26.....	3,646	406	517	448	1,093	1,045	57	80
1927-31.....	3,795	463	429	521	1,145	1,107	47	83
1921-22.....	2,608	310	391	289	822	713	31	52
1922-23.....	3,781	414	574	471	1,151	1,007	72	92
1923-24.....	3,554	420	577	430	1,058	952	47	70
1924-25.....	3,824	411	549	496	1,164	1,054	65	84
1925-26.....	4,465	476	497	555	1,269	1,498	71	99
1926-27.....	4,252	486	518	531	1,257	1,315	59	86
1927-28.....	4,147	492	479	560	1,258	1,215	54	90
1928-29.....	4,292	516	477	612	1,302	1,223	57	104
1929-30.....	3,849	487	393	557	1,188	1,096	40	88
1930-31.....	2,432	334	279	345	719	685	25	46

Northern North America regained second place in our list of foreign markets, accounting for over 17 per cent of total exports but sustaining a drop of 36 per cent from the trade of the preceding year. This recession brought Canada from the position of first to second individual purchaser of American goods.

Latin America.—Latin-American trade, comprising both Southern North America and South America, dropped from second to third place. Exports to Latin America constituted slightly more than 16 per cent of the total and a decline of 39 per cent

from the preceding year. South American trade alone fell 43½ per cent. Argentina remained the leading market in this area but dropped to eighth place among our foreign customers, with \$88,800,000, a recession of nearly 50 per cent from the preceding year. The same relative decline transpired in Brazilian exports at \$37,700,000, fifth individual Latin American market. Chile barely topped Brazil with \$38,100,000, a decline of only 26 per cent from 1929-30. As in the latter period, Mexico and Cuba were respectively second and third among Latin American pur-

RAILROAD TRAFFIC AND EARNINGS

chasers. Mexican business shrunk 38 per cent to \$85,400,000 while Cuba's 43 per cent recession placed its trade at \$66,400,000.

Asia.—Asiatic trade showed a decline of 32 per cent and represented 12½ per cent of total exports. Japan with \$145,900,000 was our fifth foreign market, with a trade reduction of 36 per cent from 1929-30. Chinese exports were seventh, a recession of 27 per cent to \$98,700,000. Philippine trade shrunk nearly 28 per cent to \$55,300,000 while Indian purchases declined only 16 per cent to \$42,500,000. New Zealand and, particularly, Australia, the principal Oceanic areas, recorded exceptionally severe reductions. Australian purchases were off 64 per cent to \$43,100,000 and New Zealand 47 per cent to \$19,800,000. In the African trade, British South Africa comprised nearly one-half the total with a recorded business of \$32,000,000, 40 per cent below the preceding year.

GEOGRAPHIC DISTRIBUTION OF IMPORT TRADE

Europe was again the chief source of imports, supplying nearly 30 per cent of the total, or \$719,000,000, which represented a shrinkage of 39 per cent from the 1929-30 figure. The United Kingdom continued as our third leading foreign supplier, with a total of \$159,800,000 or 43 per cent below last year. German sales ranked fourth at \$144,600,000, a shrinkage of over 35 per cent. France supplied \$92,000,000 of our imports, ninth in the list of all sources and a decline of nearly 40 per cent. Some of the less important supplies of American imports,—Finland, Greece, Norway—

showed the smallest relative reductions in current trade.

Asia continued as the second source of imports, with \$685,000,000 or 28 per cent of all purchases. Japan was again the second largest supplier of American imports, with \$240,300,000, a decline of over 34 per cent from the preceding year. British Malayan sales shrunk 40 per cent to \$102,900,000, purchases of Philippine goods were off less than 20 per cent, to \$98,500,000 and China supplied \$87,900,000 of merchandise, a drop of more than 43 per cent.

Canada continued the leading individual source of imports, with 10.5 per cent of the total or \$322,700,000, a decline of 32 per cent.

Latin America.—Latin-American purchases amounted to \$624,000,000, more than 20 per cent of total imports. South American trade alone dwindled nearly 40 per cent from the preceding year to \$345,000,000. Brazil was our fifth largest supplier with \$120,700,000, a decline of nearly 30 per cent. Cuba was eighth, with \$96,800,000, a drop of 36 per cent. Argentine sales shrunk 67 per cent to \$35,400,000 and Mexican imports were down more than 41 per cent to \$59,400,000. Purchases from Colombia were off only 20 per cent to \$84,300,000 and the Dutch West Indies sold us \$66,000,000 worth of merchandise, a decline of only 3 per cent.

Australia and Africa.—Imports from Australia amounted to only \$15,000,000, a shrinkage of 32 per cent while Egyptian sales, formerly the most important African source, were off 84 per cent to only \$3,800,000. The Belgian Congo with \$7,400,000 was the leading African supplier.

RAILROAD TRAFFIC AND EARNINGS

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RAILROAD MILEAGE

Comparative Figures.—Class I railroads in the United States, including those earning \$1,000,000 or more

yearly in railway operating income, operated approximately 242,000 miles of railroad line in 1931. All railroad carriers, including Class I, II and III

X. BUSINESS AND FINANCE

operated about 261,000 miles. This represents but a slight increase in mileage operated since 1921 accounted for by the fact that railroads in the United States are not extending their lines in this post-war decade. The number of miles of railroad line operated by Class I Carriers 1921-1930, inclusive is as follows, showing that railroad mileage is increasing at less than 1,000 miles annually:

Year	Miles of Railroad Operated
1921.....	235,232
1922.....	235,220
1923.....	235,356
1924.....	235,750
1925.....	236,593
1926.....	236,974
1927.....	238,356
1928.....	240,166
1929.....	241,568
1930.....	242,009

Growth of Trackage.—The total mileage of all railroad tracks operated, including main tracks, yard tracks and sidings, has grown more rapidly than the miles of railroad line. In 1930, Class I Carriers operated 429,200 miles of railroad track, nearly 22,000 miles more than the 407,531 miles operated in 1921. The growth of trackage in the intervening years is shown in the figures below:

Year	Miles of Railroad Track Operated
1921.....	407,531
1922.....	409,359
1923.....	412,993
1924.....	415,028
1925.....	417,954
1926.....	421,341
1927.....	424,738
1928.....	427,054
1929.....	429,054
1930.....	429,200

Construction and Abandonment.—During the year ended Oct. 31, 1930, the most recent annual report of the Interstate Commerce Commission, the Commission authorized 54 applications for the construction of 1596 miles of new railroad line and 72 applications for the abandonment of 1807 miles of existing road. Applications were denied which sought to construct 247 miles of line and to abandon 226 miles.

RAILROAD EQUIPMENT

Locomotives.—At the beginning of 1931, Class I railroads had in serv-

ice 55,600 locomotives with a total tractive power of 2,550,000,000 pounds, and an average tractive power of 45,500 pounds. The number of steam locomotives has decreased annually since 1924, while the total tractive power has increased each year until 1926. Since that year the reduction in the number of locomotives has caused slight annual decreases in the total tractive power. The average tractive power has increased steadily year by year and has nearly doubled since the beginning of the century. The decline in the number of locomotives coupled with an increase in average tractive power indicates that the railroads are replacing smaller obsolete locomotives of small tractive power with a smaller number of locomotive units of large tractive capacity. The changes in this direction since 1921 are shown below:

Year	No. of Locomotives	Average Tractive Power	Total Tractive Power
1921.....	64,949	36,935	2,385,469,940
1922.....	64,512	37,441	2,401,451,501
1923.....	65,327	39,177	2,544,114,827
1924.....	65,358	39,891	2,593,178,015
1925.....	63,974	40,666	2,586,868,120
1926.....	62,761	41,886	2,611,237,975
1927.....	61,363	42,798	2,606,171,030
1928.....	59,470	43,838	2,579,643,450
1929.....	57,571	44,801	2,550,812,775
1930.....	55,600	45,500	2,550,000,000

Freight Cars.—The number of freight carrying cars in use in 1930 and 1931 reflects the continuation of the decline from the peak reached in 1925. Old and obsolete freight cars have been replaced by newer equipment of larger carrying capacity and improved standards of construction. This trend is indicated in the almost unbroken annual increases in the average carrying capacity of freight cars and in total freight car capacity.

Year	No. of Freight Cars	Average Capacity (Tons)	Total Capacity (Tons)
1921.....	2,315,692	42.5	98,504,017
1922.....	2,293,392	43.1	98,846,836
1923.....	2,315,612	43.8	101,318,213
1924.....	2,348,725	44.3	104,149,381
1925.....	2,357,234	44.8	105,569,670
1926.....	2,348,679	45.1	105,952,818
1927.....	2,324,834	45.5	105,845,568
1928.....	2,297,589	45.8	105,321,832
1929.....	2,277,505	46.3	105,410,586
1930.....	2,272,000	46.6	106,000,000

RAILROAD TRAFFIC AND EARNINGS

Passenger Cars.—Railroad passenger cars operated by Class I Carriers, exclusive of the cars owned by the Pullman Company, have diminished in number each year since 1924, due to the shrinkage in carload passenger traffic. In 1930 the Class I Carriers operated 52,100 passenger-train cars, nearly 3,000 less than in the peak year, 1924. The decline in the number of cars is offset by the increased size of passenger cars, and the improvements in seating arrangements, lighting, all-steel construction, air-conditioning and other improvements. The trend in the number of passenger cars in service in the decade 1921-1930 is shown below:

Year	Number of Railroad Passenger Cars
1921.....	54,331
1922.....	54,354
1923.....	54,718
1924.....	55,040
1925.....	54,622
1926.....	54,773
1927.....	53,882
1928.....	53,097
1929.....	52,259
1930.....	52,100

Improvement and Betterments.

—Class I Carriers in 1930 invested \$872,608,000 gross in improvement and betterments, including expenditures for new locomotives, freight cars, passenger cars, additional track and track material, heavier rail, shops and round houses and other improvements in their plants.

Significant developments in railroad equipment include increase in average tractive power of locomotives, in capacity of freight-carrying cars, and in the size, length and seating capacity of new passenger coaches; improvements in air conditioning of passenger cars, increase in use of electric, gasoline, gas electric and diesel locomotives; increased use of motor trucks, buses, gasoline cars and gas-electric coaches in railroad freight and passenger services; progress in modern terminal facilities for handling and storing perishable freight traffic, and in substitution of steel rails of 100 pounds or over per yard for lighter

rail, and increase in average freight train loads, and in average rate of speed in freight train service.

RAILROAD INVESTMENT

Increase.—As a result of the expenditures of the railroads in new and improved rolling stock and other equipment and facilities the total property investment increased in 1930 nearly \$500,000,000. In 1930 the total property investment of Class I railroads in the United States amounted to approximately \$26,505,000,000. This amount includes the investment in road and equipment, materials, supplies and cash. The investment has increased over \$5,000,000,000 since 1921. The net capitalization of all roads, the total amount of stocks and bonds outstanding in the hands of the public in 1930 was approximately \$19,000,000,000, an increase of about \$2,000,000,000 over the sum outstanding in 1921. The latest available figures indicate that the net capitalization outstanding in the hands of the public is about 61% funded debt and 39% capital stock.

Total Property Investment.

The total investment in Class I Carriers for the period 1921-1930, as reported by the Interstate Commerce Commission in 1931 is as follows:

Year	Property Investment
1921.....	\$21,429,471,897
1922.....	21,658,646,627
1923.....	22,537,886,117
1924.....	23,261,164,111
1925.....	23,833,323,310
1926.....	24,505,806,634
1927.....	25,039,211,037
1928.....	25,458,800,327
1929.....	26,048,315,879
1930.....	26,535,050,825

RAILROAD PERSONNEL

Employment and Wages.—The average number of persons employed by Class I railroads was nearly 172,500 less than the average number of workers in 1929, while the total railroad wage payments and the average annual compensation per employee also declined below the averages for 1929. The number of persons employed by Class I railroads in 1930

X. BUSINESS AND FINANCE

was 1,448,353, more than 150,000 less than in 1921, and in fact lower than the total railroad employee army in any year since 1909. Furloughs and terminations have still further reduced the number of employees on railroad payrolls in 1931. The average number of employees of Class I Carriers for the period 1921-1930 with the total railroad payroll and average annual compensation per employee are shown below:

Year	No. of Employees	Total Railway Payroll	Average Annual Compensation
1921....	1,659,513	\$2,765,218,079	\$1,666.28
1922....	1,626,834	2,640,817,005	1,623.29
1923....	1,857,674	3,004,071,882	1,617.11
1924....	1,751,362	2,825,775,181	1,613.47
1925....	1,744,311	2,860,599,920	1,639.96
1926....	1,779,275	2,946,114,354	1,655.79
1927....	1,735,105	2,910,182,848	1,677.24
1928....	1,656,411	2,826,590,471	1,706.45
1929....	1,660,850	2,896,566,351	1,744.03
1930....	1,488,353	2,550,544,277	1,713.67

Classification.—The employees of Class I railroads, including the large switching and terminal railroads, are divided into the following classes of employment at average annual salaries or wages for 1930 as shown at top of next column.

Classification of Employees		Average Annual Salaries or Wages
Executives.....	16,599	\$5,747.00
Professional, clerical and general employees....	254,093	1,766.00
Maintenance of way and structure employees...	349,202	1,128.00
Maintenance of equipment and stores employees.....	405,900	1,592.00
Transportation employees, other than train or yard employees	180,881	1,515.00
Train and engine service employees.....	283,710	2,411.00
Yard masters, switchmen and hostlers.....	20,303	2,358.00

RAILROAD EARNINGS

Revenue Losses.—Class I Carriers earned operating revenues in 1930 of \$5,281,196,870, according to the preliminary figures prepared by the Interstate Commerce Commission, a decrease of more than \$1,000,000,000 from the total operating revenues in 1929. Operating revenues fell below \$6,000,000,000 for the first time since 1924. Freight revenues fell to \$4,075,698,241 from \$4,815,448,246 in 1929, a decrease of more than \$700,000,000. Passenger revenues again declined from \$872,466,361 in 1929 to \$728,488,903 in 1930, a decrease of nearly \$150,000,000.

REVENUES OF CLASS I CARRIERS, 1921-1930

Year	Freight Revenue	Passenger Revenue	Total Operating Revenue
1921.....	\$3,911,277,268	\$1,151,770,842	\$5,516,598,242
1922.....	3,992,441,331	1,074,108,060	5,559,092,708
1923.....	4,606,720,192	1,145,698,579	6,289,580,027
1924.....	4,333,585,195	1,075,039,219	5,921,496,325
1925.....	4,541,646,040	1,056,395,303	6,122,509,856
1926.....	4,797,780,122	1,041,816,167	6,382,939,546
1927.....	4,632,321,165	974,950,863	6,136,300,270
1928.....	4,680,455,593	901,018,801	6,111,735,511
1929.....	4,815,448,246	872,466,361	6,279,520,544
1930.....	4,075,698,241	728,488,903	5,281,196,870

Freight revenue for the first eight months of 1931 aggregated \$2,240,640,108 against \$2,741,718,010 for the corresponding period of 1930, forecasting a further sharp decrease in railroad freight revenue for the full year 1931.

Passenger revenues for the eight months' period of 1931 amounted to \$391,051,980 compared to \$513,186,077 for the first eight months of 1930, heralding another sharp decline in passenger revenues for 1931.

Operating expenses for the full year 1930 were \$3,930,928,687, a de-

crease of \$600,000,000 below the total of \$4,506,056,262 for 1929. The operating expense figures thus far available for 1931 indicate a further reduction in this year. The operating expenses of Class I Carriers including switching and terminal companies for the first five months of 1931 fell to \$1,436,628,823, compared with \$1,739,226,921 for the same period of 1930. Railway operating expenses for Class I Carriers, excluding switching and terminal companies for the period 1921-1930 are shown below:

RAILROAD TRAFFIC AND EARNINGS

Year	Railway Operating Expenses
1921.....	\$4,562,668,302
1922.....	4,414,522,334
1923.....	4,895,166,819
1924.....	4,507,885,037
1925.....	4,536,880,291
1926.....	4,669,336,736
1927.....	4,574,177,821
1928.....	4,427,995,036
1929.....	4,506,056,262
1930.....	3,930,928,687

Railway Operating Ratio.—Railroad operating efficiency is usually measured by the percentage ratio of operating expenses to operating revenue. The operating ratio for the full year 1930 was 74.43%, and for the period of 1931 thus far available, 79.28%. The changes in operating ratio for the decade 1921-1930 are shown below:

Year	Operating Ratio %
1921.....	82.80
1922.....	79.39
1923.....	77.80
1924.....	76.11
1925.....	74.08
1926.....	73.14
1927.....	74.54

TAX AND DIVIDEND PAYMENTS OF CLASS I RAILROADS

Year	Railroad Tax Payments	Ratio Taxes to Gross Operating Revenues %	Dividend Payments	Average Cash Dividend %
1921.....	\$275,875,990	5.00	\$298,511,328	4.1
1922.....	301,034,923	5.52	271,573,751	3.7
1923.....	331,915,459	5.28	296,127,048	4.0
1924.....	340,336,686	5.75	320,429,767	4.2
1925.....	358,516,046	5.86	342,020,885	4.5
1926.....	388,922,856	6.09	399,243,963	5.2
1927.....	376,110,250	6.13	411,581,093	5.3
1928.....	389,432,415	6.37	430,677,138	5.3
1929.....	396,682,634	6.32	490,125,673	6.0
1930.....	348,584,573	6.60	495,846,351	6.1

TON-MILE EARNINGS OF CLASS I RAILROADS

The average revenue per ton-mile of freight hauled by Class I Carriers declined from 1.076 cents in 1929 to 1.063 cents in 1930. This represents a continuation of the steady downward trend in average revenue since 1921, when the average revenue per ton-mile was 1.275 cents. Average revenue per passenger mile decreased to 2.716 ¢ in 1930 from 2.808 ¢ in 1929 and 3.086 ¢ in 1920. (See table below.)

Year	Per Freight Ton-Mile	Per Passenger Mile
1921.....	1.275¢	3.086¢
1922.....	1.177	3.027
1923.....	1.116	3.018

1928.....	72.44
1929.....	71.96
1930.....	74.43

RAILROAD TAXES AND DIVIDENDS

The amounts paid by Class I railroads to various governmental agencies in taxes was nearly \$50,000,000 less in 1930 than in 1929. Taxes consumed 6.60% of the gross operating revenues of Class I Carriers compared to 6.32% in 1929. The same carriers paid stockholders \$495,846,351 in dividends in 1930, an increase of more than \$5,000,000 over the amount paid in 1929. The average cash dividend paid by Class I Carriers was 6.1% in 1930 and 6.0% in 1929. The slight increase in dividend payments in 1930 was due to increases in railroad dividend rates in the last half of 1929. Severe reductions in dividend rates and the omission of dividends by a number of dividend-paying carriers in 1931 greatly reduced the amount of dividend payments and the rate.

Year	Freight	Passenger
1924.....	1.116¢	2.978¢
1925.....	1.097	2.938
1926.....	1.081	2.936
1927.....	1.080	2.896
1928.....	1.081	2.850
1929.....	1.076	2.808
1930.....	1.063	2.716
1930 (first eight months).....	1.064	2.734
1931 (first eight months).....	1.058	2.548

FREIGHT TRAFFIC

The freight traffic of railroads in the United States has been adversely affected by the depression in business and by the competition of other carriers. The loss of traffic is indicated by the sharp decline in freight traffic originated, in total freight traffic transported, and in ton-miles transported in 1930, and the figures for the

X. BUSINESS AND FINANCE

portion of 1931 available at this time indicate even further decreases in these vital items. Class I Carriers of the United States originated 1,153,196,636 tons of freight in 1930, as against 1,339,091,007 tons in 1929, a decrease of approximately 186,000,000 tons of freight traffic. The total freight tonnage transported fell from 2,451,601,084 tons in 1929 to 2,063,078,000 in 1930. The revenue ton-miles transported in 1930 was 383,787,569,000 compared with 447,321,561,129 miles

in 1929. These figures are so huge that it is difficult to fully comprehend their import. The revenue tons of freight transported by Class I Carriers for the first eight months of 1931 aggregated 1,087,716,000 tons as against 1,372,201,000 for the same period in 1930. The decline in freight traffic originated, in total tonnage transported, and in ton-miles transported has discounted ten years of railroad development.

Year	Railroad Tonnage Originated	Tonnage Transported	Ton-Miles Transported
1921.....	940,000,000	1,690,000,000	306,804,000,000
1922.....	1,023,000,000	1,840,000,000	339,285,000,000
1923.....	1,279,000,000	2,333,000,000	412,727,000,000
1924.....	1,187,000,000	2,171,000,000	388,415,000,000
1925.....	1,247,000,000	2,304,000,000	413,814,000,000
1926.....	1,336,000,000	2,465,000,000	443,846,000,000
1927.....	1,281,000,000	2,363,000,000	428,736,000,000
1928.....	1,285,000,000	2,361,000,000	432,915,000,000
1929.....	1,339,000,000	2,451,000,000	447,321,000,000
1930.....	1,153,000,000	2,063,000,000	383,787,000,000

DISTRIBUTION OF TONNAGE ORIGINATED IN 1930

Commodity Group	Tonnage Originated	Approximate Percentage of Total Traffic Originated
1. Products of mines.....	642,536,854	56
2. Manufactures and miscella- neous.....	277,765,429	24
3. Products of ag- riculture.....	110,728,445	10
4. Products of for- ests.....	69,370,554	6
5. Animals and products.....	23,128,633	2
6. All less than car- load traffic...	29,666,721	2
Total.....	1,153,196,636	100

PASSENGER TRAFFIC

The passenger business of the railroads of the United States has declined each year since 1923. In 1930 the Class I railroads transported 704,-

053,000 revenue passengers, a decrease of more than 75,000,000 as compared with 1929 when 780,468,302 fare-paying passengers were transported. The number of passenger-miles transported declined from 31,074,134,542 in 1929 to 26,822,517,000 in 1930. Statistics for the first eight months of 1931 indicate that a total of 410,914,000 passengers were transported in this period as against a total of 481,362,000 for the corresponding period of 1930. The average journey of railroad passengers in 1930 was 37.9 miles in 1930, as against 39.6 miles in 1929, and 35.5 miles in 1921. The average revenue per passenger-mile decreased from 2.808 cents in 1929 to 2.716 cents in 1930, and the figures available for 1931 indicate a further drop to 2.548 cents per passenger mile as against 2.734 cents in the corresponding period of 1930.

Year	Passengers Transported	Passenger Miles Transported	Average Revenue Per Passenger Mile (Cents)
1921.....	1,035,000,000	37,312,000,000	3.086
1922.....	967,000,000	35,469,000,000	3.027
1923.....	986,000,000	37,956,000,000	3.018
1924.....	932,000,000	36,090,000,000	2.978
1925.....	888,000,000	35,950,000,000	2.938
1926.....	862,000,000	35,477,000,000	2.936
1927.....	829,000,000	33,649,000,000	2.896
1928.....	790,000,000	31,601,000,000	2.850
1929.....	780,000,000	31,074,000,000	2.808
1930.....	704,000,000	26,822,000,000	2.716

CONTROL OF PRODUCTION

NET RAILWAY OPERATING INCOME

The net railway operating income of Class I Carriers declined sharply in 1930 and a further drop is presaged for 1931. With the decline in net operating income there has been a corresponding reduction in the rate of return earned by the carriers upon their aggregate property investment. Net railway operating income declined from \$132,634,565 in 1929 to \$88,405,628 in 1930, the lowest figure since 1921. The rate of return decreased from 4.01% in 1929 to 2.66% in 1930, and the figures available for the period of 1931 adjusted on an an-

nual basis to reflect seasonal fluctuations in traffic and earnings and based upon the total property investment of the carriers at the beginning of the year indicates a return of about 1.53%.

Year	Net Railway Operating Income	Rate of Return %
1921.....	\$ 51,863,871	2.02
1922.....	110,035,604	4.23
1923.....	130,335,455	4.73
1924.....	142,925,121	5.01
1925.....	168,183,727	5.63
1926.....	163,058,658	5.19
1927.....	136,488,599	4.24
1928.....	133,545,259	4.08
1929.....	132,634,565	4.01
1930.....	88,405,628	2.66

CONTROL OF PRODUCTION

By WILLIAM F. NOTZ

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GENERAL

Outstanding measures taken during the year to furnish relief from over-production include systematic, large-scale destruction of surplus supplies; purchase of excess stocks by governmental agencies and withholding from market; international agreements limiting exports, and inter-state pacts restricting acreage and production.

WHEAT

The Federal Farm Board and the Department of Agriculture early in 1931 urged American farmers to adjust their plans for crops to economic demands of the market and to reduce acreage as a means of correcting the disastrously low prices. On March 23, the Federal Farm Board announced that since November, 1930 the Grain Stabilization Corporation had been purchasing sufficient wheat to maintain prices in this country, which policy had been adopted to meet a most acute emergency, that, however, it would henceforth not authorize further stabilization purchases from the 1931 wheat crop. The Board reported on Nov. 25 that it held 189,656,187 bushels of wheat and 1,310,789 bales of cotton. On Nov. 5, the Farm

Board announced that reductions in wheat acreage, unfavorable weather conditions, and crop shortages throughout the world this year would take up the oversupply of the grain accumulated in the past. At the same time the Department of Agriculture estimated that hard winter wheat acreage had been reduced from 18 to 20 per cent.

SUGAR

On May 9, an international sugar pact was agreed to by representatives of the sugar interests of Czechoslovakia, Germany, Poland, Hungary, Belgium, Cuba and Java, seven of the largest sugar exporting countries. It provides for the establishment of an international sugar council which is to supervise a gradual limitation of the export of sugar, to go into effect when the price reaches 2 cts. a pound. At that price, export quotas already assigned to each of the member nations are to increase by 5 per cent or about 225,000 tons in the aggregate. At 2½ cts. the sugar council may increase its quotas an additional 2½ per cent, and at 2½ a further 10 per cent may be allowed. The world sugar surplus,

—about 3,000,000 tons—has been divided into five lots in order to dispose of it in an orderly manner over a period of five years. A feature of the agreement is that the governments of the several countries will back the agreement to limit exports by issuing licenses in accordance with the decisions of the council. The council, which represents 80 per cent of the world's sugar exporting interests has 90 votes, of which 35 have been allotted to Cuba, 30 to Java and 25 to Europe, as follows: Czechoslovakia 8, Germany 6, Poland 6, Hungary 3, Belgium 2. The three main producing countries remaining outside of the convention besides the United States are Russia, Peru and Santo Domingo.

FRUIT

Destruction of a surplus crop and restriction of subsequent crops has been the way taken by California peach growers to save themselves from economic ruin. When the Canners' League of California found that the potential peach pack for 1931 would reach 17,000,000 cases, an increase of 4,000,000 cases over 1930, an agreement was reached to limit the pack to 9,000,000 cases. To do this, the Canners' League decided to purchase 144,000 tons of surplus of the cling peach crop at \$12 per ton and destroy the same. Besides, a reduction of 20 per cent in acreage was decreed by peach growers, involving the uprooting of peach trees on 12,000 acres, for which growers are to be reimbursed at the rate of \$2.50 per tree. The canners contributed a fund of \$1,500,000 to be used by the League in carrying out the measures for curtailment of production.

COFFEE

In Brazil a total of 2,217,000 bags of coffee was destroyed by the National Coffee Council from September, 1930 to June, 1931 in an effort to eliminate that country's coffee surplus. The stocks of coffee on hand had risen from 3,900,000 bags in 1926 to 20,960,000 bags in 1931.

COTTON

Radical measures to restrict the cotton acreage were taken by the legislatures of Texas, Arkansas and Mississippi. On Sept. 21, the legislature of Texas passed a bill which provides that cotton not to exceed 30 per cent of the land cultivated during 1931 may be planted in 1932; that no land planted to cotton in 1932 may be planted thus in 1933; that not over 30 per cent of the land planted to all crops in 1932 may be planted to cotton in 1933 and that in 1934 and the years thereafter no land may be planted to cotton which was planted thus in the preceding year. The legislature of Arkansas Oct. 10, enacted a law to restrict the cotton acreage in 1932 and 1933 to 30 per cent of the land in cultivation in 1931. The act is to become effective only after states producing three-fourths of the American cotton in 1930 have adopted similar laws. It is estimated that the reduction act will lower cotton acreage in Arkansas slightly less than half, and amount to about 1,500,000 acres. A similar act was passed on the same date by the legislature of Mississippi. This restrictive legislation was supplemented by action on the part of the Texas Bankers' Association which endorsed the so-called New Orleans Cotton Plan to withhold financial support next year from cotton farmers who ignore such laws as may be adopted by the cotton-belt states for the reduction of cotton acreage. The South-wide Uniform Cotton Control Conference, representing ten cotton states, at a meeting in Jackson, Miss., Nov. 23, adopted the Texas curtailment plan calling for 50 per cent reduction in planting in 1932 and 1933, as its recommendation for relief legislation in all the Southern States. It is estimated that as a result of these restrictive measures 7,000,000 bales will be kept off the market during the current crop year expiring July 31, 1932.

OIL

Numerous meetings were held during the year by oil producers, governors of states, and Federal officials for the purpose of stabilizing the oil in-

dustry. Curtailment of domestic production and restriction of imports were the two main objects sought. At a meeting of the Governors' Oil Relief Conference, Jan. 16, Secretary of the Interior Wilbur advocated a compact between the oil-producing states, subject to approval by Congress, to regulate production through planning, unit operation, and a proper protection of seasoned and established oil-producing areas, when they come in contact with flush fields. At a Petroleum Conservation Conference in Washington in April an oil stabilization pact was adopted, which makes effective an interstate agreement for the coordination of conservation methods in the oil-producing states. Subsequently, an inter-state proration of output scheme was put into operation, and was enforced by martial law in Texas and Oklahoma. Regarding oil imports, an agreement was reached on July 10, by the Standard Oil Co. of New Jersey, the Gulf Oil Corporation, the Shell Union Oil Corporation, and the Pan-American Petroleum and Transport Co., which provides for the restriction of imports into the United States of crude oil and gasoline from Venezuela. On Sept. 21, plans were laid before Secretary of Commerce Lamont by a delegation representing the governors of Texas, Oklahoma and Kansas, calling for world curtailment of petroleum production through 1934.

COPPER

Copper production has been in excess of consumption throughout the year, stocks of refined copper having reached record high, and prices record low levels. In June, American producers agreed to restrict domestic production by closing some mines and curbing the operation of others. Failure of some foreign copper interests to live up fully to an understanding reached the previous year to curtail output frustrated efforts to stabilize the market. In October and November an international conference of copper producers was held in New York to work out some basis of curtailment of production. This confer-

ence on Nov. 27 adopted a plan calling for a controlled world production of about 55,000 tons a month representing 26½ per cent of the stated capacity of the leading copper mining concerns of the world.

ANTI-TRUST LAWS AND CONSERVATION

The anti-trust laws proved an obstacle to various plans considered during the year for the restriction of production in the oil, lumber, coal and other natural resources industries. U. S. Attorney-General Mitchell stated that he had no authority to suspend the anti-trust laws in the hope of making an industry prosperous, and made it clear that agreements to fix and control prices on the part of producers would receive no special dispensation from the Department of Justice. Out of this situation there developed a strong movement in the course of the year favoring action by Congress for the modification of the anti-trust laws. On Sept. 18, the American Bar Association passed a resolution asking for a revision of the anti-trust laws so as to confer upon the Federal Trade Commission the power to pass in advance on restraint of trade contracts, voluntarily submitted, and to grant immunity to parties, whose contracts the Commission would approve, from the criminal, confiscatory and three-fold damage provisions of the anti-trust laws. On Sept. 24, the New York State Chamber of Commerce voted in favor of modifying the Sherman and Clayton laws. The Chamber of Commerce of the United States on the recommendation of its Natural Resources Production Committee, ordered a referendum of the Chamber's membership on the question of recommending legislation to permit agreements to curtail production to a reasonable extent, in the public interest, these agreements to be authorized by a national tribunal to consist of government officials familiar with the natural resources industries and to continue only so long as the emergency persists, in the tribunal's opinion.

STATE FACTS TO SAFEGUARD NATURAL RESOURCES

As a way out of the dilemma occasioned by the anti-trust laws, steps have been taken to control natural resources through inter-state agreements, exemplified particularly by the efforts of Texas, California and Oklahoma to curtail oil production. Simi-

lar inter-state compacts are under contemplation respecting the bituminous coal industry of Pennsylvania, West Virginia, Kentucky and Ohio, and the lumber industry on the West Coast. Uniform State laws controlling production, it is contended, do not come within the sphere of the anti-trust laws.

FOREIGN TARIFFS AND TRADE CONTROLS

BY HENRY CHALMERS

CHIEF, DIVISION OF FOREIGN TARIFFS, DEPARTMENT OF COMMERCE

CONTINENTAL EUROPE

Exceptional Conditions.—With the continuation and deepening of the economic depression during 1931, bringing further decline in export trade, and with the situation aggravated by increasing anxiety over national deficits and financial uncertainties, the international trade problems of most of the countries of Continental Europe were most abnormal. As a consequence, the majority of the tariff and trade-control measures were not in the nature of ordinary tariff adjustments to changing conditions of production and competition.

Tariff Revisions.—Most of the countries on the Continent did indeed make some selective changes in their import duties on particular groups of commodities, most often in connection with the commercial treaties with other European countries. A few decided upon horizontal advances of customs duties for revenue purposes, and several of the smaller (Baltic) countries made more extensive changes. However, no major country of continental Europe made any general overhauling of its tariff. To a certain extent, the predominant fixed form of the tariff rates of the European countries, expressed as a specific number of francs per 100 kilos, automatically affords some additional protection to domestic producers during a period of sharply falling prices. But, under the rapidly changing conditions of competition, and the consequent uncer-

tainty as to developments ahead, apparently made the usual recourse to tariff revision unsuited to the times, and probably accounts for the more general resort to other forms of controlling import trade, which were more immediately responsive, if more drastic, as means of meeting new or difficult situations. Particularly since the late spring of 1931, when financial difficulties came into prominence and reacted upon other countries as soon as one country was affected, have the trade relations with many of the European countries been subject to new and special obstacles.

Diversity of Trade Controls.—The year may be said to have been marked on the Continent of Europe by the diversity of measures to control foreign trade with various ends in view and by special devices and arrangements, many of them of an obviously emergency or shifting nature. These were designed, (1) to stimulate greater consumption of domestic products by mixing requirements, quota limitations, occasional license restrictions, as well as by increased duties; (2) to afford governments additional revenues by horizontal advances in duties, sales taxes, etc., or by substantial increases in the duties on products locally regarded as luxuries; (3) to improve an unfavorable trade balance by cutting down the volume of imports, sometimes accompanied by efforts to facilitate exports, the former, by import restrictions or quota limitations,

by exchange controls operated to discourage importation of less essential commodities; the latter, by reciprocal trade agreements, by stimulated exportation, particularly of farm staples, by control of foreign exchange dealings, and, in the case of the Scandinavian countries, by the sympathetic suspension of the gold standard following the British action; (4) and, toward the latter part of the year, primarily to maintain the financial solvency or currency exchange value of the country by intensive application of one or more of the methods indicated above; or, (5) to offset actual or prospective intensified competition or trade restrictive measures on the part of other countries by vesting in the governments emergency authorities to control foreign trade, either by provisional tariff adjustments, or more often, by authority to set import quotas or otherwise to restrict importations of particular commodities.

Autonomous Duty Changes. —

The only comprehensive duty changes which, as already indicated, were limited to the Baltic countries took place mostly during the first part of the year. They seemed to have the character of the tariff adjustments made in the normal course of events as in years past, and included decreases as well as increases. However, the tariff changes made by these same countries during the latter months of the year were distinctly upward, and the commodities included indicated that the prime objective had changed somewhat and was directed primarily either to produce greater revenue from the customs, or to check the outflow of currency by the curtailment of imports. The actions of this group of countries perhaps well illustrate the trends of the year. More limited autonomous changes in duties were effected during 1931 in about ten others of the Continental countries, some downward but mostly upward, and principally affecting agricultural products.

Tariff Changes by Treaties. —

The majority of the tariff changes on the part of the countries of Europe were brought about in the course of

numerous commercial treaties or agreements between various sets of governments, the prominent feature of which was generally the exchange of tariff advantages on products of special interest to each other, either through reductions of the duties then operative, or by "consolidations," *i.e.* assurances that the existing duties would not be changed during the life of the agreement. In some cases, the object of the treaty negotiations was primarily to release one or both countries from earlier undertakings not to increase particular duties, when freedom of action seemed particularly desirable to the governments involved. In such cases the revised agreements often carried higher duties on the same commodities than did the original agreement, but those were frequently offset by duty concessions on different products or other advantages. While the financial disturbances and exchange controls that developed toward the end of the year seriously complicated matters, broadly viewed, the duties of a number of the countries of Central and Eastern Europe at the close of the year probably presented less hindrance to the movement of the principal products normally exchanging between them than did those in force at the beginning of 1931.

Revenue Motive in Tariff Changes. —

Tariff revision for protective purposes was less common in the countries of Europe last year than for fiscal purposes. Reserving the important tariff shift in England for the later discussion, probably the most striking tariff advance of the year was the Italian imposition of an additional 15 per cent *ad valorem* surtax on most commodities whether dutiable or free, unless Italy was bound by treaties to maintain the existing treatment, for the declared purpose of obtaining additional governmental revenues. More moderate measures, for the same purpose of offsetting declining customs revenues as trade fell off, were the increase by one-fourth of the existing duties into the Netherlands (which have been generally 8 per cent *ad valorem*), as

an emergency fiscal measure to expire in three years; and the bill before the French Parliament proposing a general increase in the present two per cent turnover tax on imports to four per cent for semi-finished and six per cent for finished products.

Aids to Domestic Products.—As indicated, material changes in protective duties among the major countries of Europe were less frequent in 1931 than in previous years, and those involved mainly staple agricultural products, where the pressure of overproduction and low prices had been most prolonged and most general. As another means of assuring larger consumption of domestic cereals, without materially increasing prices to domestic consumers, about 10 European countries established or continued the requirement for the mixing of a specified percentage of domestic wheat or other grain with the imported product, or of requiring the purchase of a given proportion of the domestic product as a condition of admission of the foreign. This mixing percentage varied among the different countries and fluctuated within particular areas, the domestic proportion of such mixtures ranging from 10 to 97 per cent of the flour produced, the latter applying in Germany. Three additional European countries adopted another method of accomplishing the same general purpose through the familiar device of a governmental or governmentally-controlled monopoly of the grain trade, tried out by other countries in the past. The requirement that imported gasoline be mixed in certain proportions with domestic alcohol, already operative with varying success in a number of countries, was proposed in two additional European countries.

Import Quota and License Systems.—The device of controlling foreign trade by license régimes and quota systems, which had so prominently marked the post-war period but had been gradually tapering away for some years, was actively revived. It came into particular prominence during the latter months of the year,

as concern of governments grew more acute over trade balances, currency exchange values, or possible abnormally large importations from countries whose export trade was being—at least temporarily—stimulated by depreciated currencies, governmental fostering of exports, the need to sell at any price, or whatever influence.

Thus, early in the fall, France introduced a series of import quotas, limiting the quantities of lumber, meats, dairy products, fish, sugar, etc. that might be admitted during given periods from the various foreign countries, in accordance with their average shipments during a period of years preceding. For the double purpose of curtailing exchange demands and protecting domestic producers, Latvia announced quotas on several lists of products, fixed at a fraction of the imports during 1930, to continue for one year. Turkey, primarily concerned over an unbalanced trade and its financial implications, took the drastic measure of limiting the importation of over a thousand commodities to specified quotas, fixed by quarters and to be drawn on in order of arrival. Poland continued the allocation of import quotas for different commodities from various countries, as for several years past, and expanded it at the close of the year by temporary import restrictions on a broad range of agricultural and manufactured goods.

The authority vested in the governments of several of the countries during December, 1931 to ration foreign trade by administrative order foreshadows similar action in other countries. The Dutch government was authorized, for a period of three years, to impose import quotas whenever deemed necessary to keep imports within normal bounds. Declaring itself motivated by the obstacles which various countries had established against Spanish exports, and impressed by Spain's unbalanced trade exchanges with various countries, the Spanish Minister of Commerce had been authorized to fix import quotas on a list of commodi-

ties (subject to amplification), and to distribute such quotas among the exporting countries "according to the necessities of Spanish economy." The Swiss Federal Council secured authority from the Parliament, for one year, to limit the importation of any class of goods, or to make it subject to a permit system.

Exchange Control as Trade Restriction.—While not strictly a form of trade control in the sense of being enforced at the customs, mention cannot be omitted of the trade restrictive effect—however unintentional—arising from the centralized control of foreign exchange resorted to by many countries of Europe during late 1931, as a means of protecting their currencies and of insuring a sufficient supply of foreign exchange to cover fixed foreign obligations or indispensable purchases abroad. The generally disturbed European financial situation, precipitated first by the financial difficulties of the Central Powers and then by the suspension of the gold standard by England and a number of other European countries largely dependent upon the pound sterling or upon the British market, is reported to have resulted in foreign trade with many countries of Central and Eastern Europe depending more upon the operation of this exchange control than upon prices, import duties or other usual considerations.

Broader Executive Trade Control Authority.—Indicative of the tense state of mind over future trade developments, or the possible injurious effects of the actions of other countries, are the surprisingly large number of European countries where the governments have been vested with authority to order prompt defensive trade-control measures if circumstances should warrant. The Austrian government was authorized to make imports from non-treaty countries subject to permits. Late in December, a group of Italian Ministries were jointly authorized to establish lists of products the importation of which may be prohibited in the public interest, with provision for

the lifting of any embargo so established for nations who will give "reciprocal treatment" to Italian goods. As an emergency measure, until the German Parliament reassembles in February, 1932, President Hindenburg granted Prime Minister Brüning blanket authority to modify import duties and make commercial treaties. A similar blanket authority, in the absence of Parliament, was granted to the President of Finland. The Ministries of Yugoslavia were authorized to increase, reduce or abolish import or export duties on any article, any such action later to be presented to Parliament for approval.

Depreciated Currencies and Tariff Measures.—The measures taken or considered to offset intensified competition from countries whose exporters were at least temporarily benefiting from depreciating currencies, constitutes a special phase of the tendency toward measures of defense against uncertain prospects. While this motive probably figured in a number of the general delegations of trade-control authority to executive officials, who could act with greater promptitude, the only actual instance in 1931 of duty surtaxes being levied against imports from countries with depreciated currencies appears in France. While only initiated in mid-November, the French action has already brought protests from other countries on the grounds of violation of most-favored-nation obligations, and of failing to take account of price advances in the depreciated currency countries that have in some measure offset the drop in exchange values. In fact, the Spanish government has been authorized to impose surcharges on merchandise from countries which levy increased duties on Spanish goods because of the depreciation of the peseta.

BRITISH EMPIRE

Extension of Tariffs.—The year was marked in the British Empire by an abnormally widespread tendency for the increase or extension of duties or other restrictive measures on im-

ports, including even Great Britain, as well as practically all of the Dominions and a great many of the colonies. In the limited upward revisions made by some of the areas, notably, Canada and South Africa, the protective motive appeared to predominate, as it did in the measures initiated by England toward the end of the year. The majority of the 1931 tariff changes in the British areas, however, appear to reflect primarily the growing acuteness of the fiscal situation of the various countries, and the problems arising from shrinking exports and unfavorable trade balances.

Revenue and Trade Balance Motives.—Thus, the falling off in customs revenues, due partly to decreased volume of imports and partly to the lower price level, which reduces proportionately the collections under the *ad valorem* tariffs common in most British areas, largely account for the sharp horizontal advances during the year in the import duties of British India and of New Zealand, and for the advance in the Australian primage duty on most imports by six per cent *ad valorem*. The extension of the dutiable list in the Malay States, and the proposal under discussion for a Malayan customs union, involving the adoption of a more general tariff for the combined area, have also been largely prompted by fiscal considerations.

England's Currency and Tariff Shifts.—The events in the British Empire of greatest significance in this field during 1931 were the suspension of the gold standard by England in September, and the election in October of a Coalition (National) government, heavily Conservative and favorable to tariff extension. The exchange depreciation of the pound sterling carried with it the currencies of most of the Dominions, of India and of most British colonies, either because the currencies of these areas were tied to sterling or because of the heavy trade dependence of those countries upon the British market. Pending definite readjustments of internal costs and prices to the new

exchange levels, this currency depreciation has served incidentally as an additional measure of protection to producers in these areas, through the increased cost of importing foreign goods, particularly from gold standard countries.

The new National Government in England was elected on a mandate to adopt whatever measures appeared necessary—including tariffs—to improve the trade balance and assist in relieving the serious economic depression and financial dislocation. Pending the working out of a permanent program of tariffs and other controls on imports, in order to check abnormally large importations in anticipation of prospective tariff action, the British Board of Trade was given authority for six months to impose duties up to 100 per cent on imports of manufactured or mainly manufactured products, and the Minister of Agriculture to levy duties for one year on secondary agricultural products. Under these authorities, temporary duties had been ordered on several lists of manufactured goods, and on a group of fresh fruits, vegetables and plants, the latter being particularly designed to restrict importation of seasonable imports which anticipate the home crop. The products of the British Empire were exempted from the new duties established under all of these temporary orders. Announcement has also been made of a prospective quota control on wheat imports, as a means of assuring a market for domestic growers, and preference to Empire growers.

Implications of New British Tariff Policy.—The departure of the British Government from its traditional free trade or low tariff position is portentous in two directions. It gives England a basis for bargaining with European and other countries, as a means of bringing about reductions in their tariffs, an objective that England has vainly sought for several years. In fact, offers for negotiations came from several Continental countries immediately upon the issuance of the first set of new duties

by the Board of Trade, but the British Government deferred these until a more definite tariff policy had been developed and clearer relations with other parts of the British Empire had been established. Greater inter-Empire tariff preferences constitute the second important step in prospect, and are expected to be the principal subject of discussion at the postponed Imperial Economic Conference now planned for Ottawa in July, 1932.

Trade Restriction by Administrative Action.—In a number of British areas, the restriction of imports during the year through increased duties was reinforced—or substituted for—by tightening up of the administration of the tariff and customs laws. This was particularly true in Canada, where the Commissioner of Customs made very active use of his authority to set arbitrary valuations upon foreign goods for customs purposes and to declare imports subject to additional or dumping duties, the latter being invoked especially during the period since the depreciation of the Canadian dollar. The New Zealand authorities were also more active in enforcing anti-dumping laws.

LATIN AMERICA

Unusual Considerations.—Primarily dependent for their fiscal stability as well as for their basic economic prosperity upon the supplying to world markets of staple foods and raw materials, the countries of Latin America were particularly affected by the over-production and sharp drop in prices of natural products which have marked the depression. The need for increased revenue, the effort to redress unfavorable trade balances by curtailment of imports, and, toward the latter part of the year, the efforts by control of foreign exchange to maintain or improve the exchange value of the national currency,—these considerations rather than protection appear to have dominated the commercial policy of most of the Latin-American countries during 1931, and to furnish the prime ex-

planation for the drastic measures taken by many of them, operating to restrict or discourage imports.

Fiscal, Trade Balance and Financial Motives.—The protective motive appears to have been prominent in the substantial increases in duties effected during the earlier part of the year by a few countries, notably, Chile, Colombia, Cuba and Uruguay. However, the revenue, trade balance, and financial considerations appear to have been the prime explanations for the successive increases of the Argentine tariff on wide ranges of goods (either by increase of rates or valuations, or by the ten per cent *ad valorem* surtax established for one year); as well as for the successive series of increased duties ordered by Chile, Colombia, Costa Rica, Ecuador, Nicaragua, Paraguay and Uruguay during the latter part of the year. Fiscal needs primarily explain also the horizontal increases in sales and luxury taxes, and consular fees, by Cuba.

The great majority of the duty changes during the year were upward, both in the countries earlier mentioned as having made general changes, and in various of the other Latin-American Republics which had occasion to make limited changes. On the other hand, the changes made in Peru and Costa Rica were almost all downward, as were individual modifications in other countries, most of them directed toward making more cheaply available supplies of foreign machinery or materials for agriculture or other lines of production, or to alleviate unemployment by fostering local enterprises.

Extension of Executive Tariff Authority.—The sense of tension and unsettlement was also evidenced in Latin America during the year in the measures vesting larger authority in connection with tariffs and other foreign trade controls in the hands of the President, ministerial boards or national councils. Such delegation of authority took place in Argentina, Colombia, Ecuador, Uruguay, and was renewed in Mexico.

Trade Control by Restrictions or Prohibitions.—Curtailement of imports through higher duties were in some cases enforced or replaced by restrictions on importations, either totally or conditionally. Several countries, notably Colombia, Ecuador, and Uruguay, ordered certain lists of articles regarded as dispensable completely excluded, although these drastic measures were often withdrawn or tempered before they had been in operation very long. Brazil and Chile limited importations of gasoline to given proportions of domestic alcohol mixed or bought, Cuba required the mixture of yucca flour in all bakery products, and Peru of domestic with foreign wheat. The Brazilian government prohibited the importation of flour for 18 months, in connection with the large-scale exchange of coffee (about 1¼ million bags) for wheat (25 million bushels) with the United States. Brazil also prohibited the importation of certain types of industrial machinery, as a means of checking over-production in certain lines.

Official Trade Monopolies.—Colombia authorized a monopoly on matches, Costa Rica established a monopoly on gasoline and proposed such handling of the trade in flour and matches, Nicaragua established a monopoly on petroleum products and on matches, and Uruguay decided upon a monopoly on alcohol and petroleum products and the making of cement for public works. The primary purpose in establishing monopolies is the increase or better collection of governmental revenue, and, as is usual in such cases, whether the monopoly be governmentally-operated or by a concessionaire, importations of the commodities involved are thereafter either prohibited or limited to the monopoly administration.

Export Duties and Controls.—In the matter of export duties and control, it is observed that the export duties were reduced in 1931 in several countries (Brazil, Mexico) or their suspension authorized (Haiti). Bolivia was one of the parties to the

international agreement for the restriction of tin exports, and Cuba led in the so-called Chadbourne agreement with other producing countries to restrict the production and exportation of sugar. On the other hand, Chile adopted a plan for paying bounties to foster exports of agricultural products and to improve local prices.

Regional Economic Agreements.—A project sponsored early in the year by Foreign Minister Planet of Chile for a conference of the Latin-American States, looking to joint economic action and involving consideration of a customs union, made little progress. As the year closed, a conference was being held at Montevideo between representatives of Argentina, Uruguay and Brazil for a similar purpose. The sponsors are more hopeful of results because of the more limited scope of the proposed agreements, and the more nearly common interests of these three neighboring countries. The first of the tariff agreements arrived at there, between Brazil and Uruguay, will, if ratified, provide for an interchange of products in border trade, and try the experiment of reciprocal duty-free importation of certain commodities from each other, the list of which would be revised periodically. A similar commercial treaty between Argentina and Uruguay, reported to be under negotiation, contemplates reductions or waivers of duties by each country on selected export products of the other. An agreement for the concerted study of the control of the livestock and meat trade of the three countries is also reported to be crystallizing.

ASIA AND AFRICA

China.—The revised tariff schedule introduced by China in the first part of the year effected a considerable number of reductions, principally on industrial equipment and materials, although the majority of the changes were upward, involving a broad range of commodities, and particularly so on goods considered

PUBLIC REGULATION OF COMMODITY FUTURES MARKETS

luxuries. Beginning in December, the Nationalist Government ordered a flood relief surtax of one-tenth the existing import and export duties, to be reduced to one-twentieth after July, 1932, and continued until the liquidation of the American wheat loan. A beginning was made toward abolition of the long-standing taxes levied at various internal points, known as "likin", by the enforcement of special excise taxes on a limited list of goods to replace these internal levies.

Japan.—A distinct movement for upward tariff revision is reported, with the tariff investigating committee expected to present its recommendations to the Diet early in 1932, although that was before the recent suspension of the gold standard and depreciation of the yen.

The Philippines adopted increased duties on cement and a number of staple foodstuffs, with authority to the Governor General to reduce them when changed conditions warrant. The Governor General recommended postponing changes proposed on other commodities pending an expert inves-

tigation of the general Philippine tax and tariff situation.

Persia.—The stringent system of control of importation by permits adopted by Persia during 1930, as a means of improving the trade balance through drastic curtailment of foreign purchases, was carried further early in 1931 by declaring all foreign trade a government monopoly. The State either reserves to itself all right to import or export the particular products, or grants licenses for importations up to fixed quotas. The original provision that foreign goods be admitted subject to the importer's undertaking to export the equivalent in Persian commodities, was later tightened by definitely limiting the granting of import permits only upon the presentation of export certificates. Egypt established a sugar monopoly.

NOTE: Discussion of the tariff in the United States is outside the scope of this article which is concerned with the measures of control of international trade on the part of foreign countries. The American tariff situation is reviewed elsewhere in this volume.

PUBLIC REGULATION OF COMMODITY FUTURES MARKETS

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DEARTH OF REGULATORY INTERFERENCE

The exchanges upon which important commodities are traded in for future delivery, and in which the hedging operations of dealers in these commodities are conducted, received an unusually small amount of attention from Congress and other legislative bodies or from administrative departments of the Government during 1931. No new statutes affecting the exchanges have been enacted and there has been an almost complete dearth of legislative enquiries and of projects for regulatory measures. This is the more remarkable since the ex-

tremely low prices to which commodities have fallen, and especially commodities like wheat, corn and cotton, which affect the welfare of very large classes of the country's population, would on their face seem calculated to produce widespread criticism and denunciation of the market organizations which are popularly, though erroneously, supposed to determine the price levels at which the respective commodities shall be distributed. Upon numerous occasions in the past, indeed, much less disastrous and distressing declines of the prices of the great agricultural commodities than have occurred in recent months have

stirred the political spokesmen of the classes affected to demand either the complete abolition of the exchanges or extensive changes in their methods and practices under the supervision of governmental authorities. The present period of abnormally depressed prices, however, has been marked by an almost entire absence of political agitation for more far-reaching governmental control of the commodity futures markets. Even the customary denunciations of the alleged ill effects of speculation upon the prices received by the farmers for their products have been largely lacking as world prices for these products fell to levels unknown for one or more generations, or even, as in the case of wheat, unknown for upwards of three centuries, with the result that great masses of the producers were nearly or completely ruined. It would appear that the very magnitude of the disaster, as well as its world-wide character, brought home to the quondam critics of the commodity exchanges the futility of attributing to these organizations or their members price movements evidently resulting from causes quite other than the activities of particular groups of persons.

CHICAGO BOARD OF TRADE

The single instance of even slight governmental interference with an important American commodity exchange during the past year had to do with the wheat market on the Chicago Board of Trade and came about through the assumption in some governmental quarters that the depression of the price of wheat to the lowest levels known in modern times must have had as one of its principal causes the operations of "bear" speculators, whose oppressive "short selling" presumably added to the burden of a grossly excessive supply of actual wheat and thereby drove prices lower than they would naturally have gone, given the world's still very large requirements for consumption. The authorities of the Chicago Board of Trade were accordingly advised by

officers of the Administration that under the circumstances the "short selling" of wheat was regarded as incompatible with the public interest and should be held in check by suitable regulations on the part of the exchange. Pursuant to this official suggestion the Chicago Board of Trade took steps to prevent the large-scale "short selling" of wheat, although an investigation of the outstanding "short interest" in wheat in that market disclosed that it was of relatively small proportions, the severe decline of the price of wheat having been due primarily to the pressure of overabundant supplies in this country at a time when the disturbed financial situation of the principal consuming countries abroad rendered them unable or unwilling to acquire and carry stocks of wheat in excess of their immediate requirements. The development of these facts naturally diminished the efforts of officers of the Government to impose restrictions on trading in the wheat futures market, and after a comparatively brief period of interference the former freedom of traders to make commitments for either "long" or "short" account was quietly restored.

THE QUESTION OF "SHORT SELLING"

At this point, however, it is perhaps in order to remark that the question of the economic and social propriety of "short selling," whether in the commodities or in the securities markets, cannot as yet be regarded as finally settled. There is still a considerable body of public opinion, expressions of which are frequently heard in political circles, to the effect that speculators who seek to make money by "selling short" and thereby exert an influence towards depressing the market value of the property of others, are engaged in an essentially illegitimate undertaking which is detrimental to the general welfare. It is, therefore, insistently urged in some politically influential quarters that legislation should be enacted which will either prohibit the practice

of "short selling" altogether or will impose such severe restrictions upon it that it will be made practically very difficult for speculators to carry it on successfully.

These contentions are strenuously objected to by members of the great securities and commodity exchanges upon several grounds, the chief of which are as follows: (1) that the orderly movement of prices in the markets is dependent upon the freedom of traders of all kinds to make commitments according to their several interpretations of the probable course of prices in response to the demand and supply conditions affecting the respective securities and commodities in which they are dealing; (2) that the practice of making contracts for the future delivery of goods is implicit in the entire fabric of modern business, such contracts in respect of securities or commodities differing in no essential characteristic from the manufacturer's contracts to deliver his products at stipulated prices over a considerable period of time, although he has neither bought the raw material nor hired the labor needed for the production of these goods; (3) that it is inconsistent with the American conception of the rights of the individual to impose artificial restrictions upon his trading activities; and (4) that it is in the interest of society that prices both for securities and for commodities should continuously and completely reflect the balance of opposite opinions with regard to the market values warranted by actually existing economic and financial conditions. These arguments, however, are vehemently traversed by numerous persons, among them some economists of repute, who contend that the unsettling effects of aggressive "short selling" in the great central markets whose price quotations are accepted by the public at large as authoritative with respect to true market values, make the practice distinctly harmful and incompatible with the orderly conduct of the country's economic and financial affairs. Accordingly, it is not improbable that in the comparatively near future

strenuous efforts will be made to induce Congress, and perhaps the legislatures of the states in which the principal security and commodity exchanges are situated, to enact laws which will either entirely prohibit "short selling" or will give authority to administrative officers of the government to keep it within very narrow bounds.

COÖPERATIVE MARKETING AND THE EXCHANGES

Finally, the possibility is undeniable that the large-scale development of coöperative marketing associations for wheat, cotton and a long list of other agricultural commodities, which has been fostered by Congress and the Administration as a means of mitigating the effects of such severe price declines as have marked the present period of business depression, may in time lead to a considerable extension of governmental regulation of the American commodity futures markets. So far the majority of the leaders of the coöperative movement have taken the position that the futures markets afford valuable assistance in the marketing of the great crops, and the coöperative associations themselves have made considerable use of the facilities of these markets. There has already become apparent, however, a certain divergence of interest between the coöperatives and the general body of users of the exchanges, the latter regarding the former as intruding upon a field which properly belongs to private enterprise and initiative. The outcome may quite conceivably be that the National Government, which seems to be completely committed to the theory of the coöperative marketing of farm products and which has made large financial contributions to the support of this system, will gradually undertake to impose upon the exchanges methods deemed likely to control more fully the price-determining functions of these institutions. It is, of course, very doubtful whether such governmental interference with the free activities of the exchanges would result in the virtual destruction of the exchanges themselves.

X. BUSINESS AND FINANCE

PUBLIC PROTECTION OF SECURITIES

By JOHN C. GODDIN

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NEW LEGISLATION

Legislative Sessions.—The year 1931 has proved quite a contrast in "Blue Sky" legislation to the exceedingly limited activity of the previous year. During 1930 there were only nine legislatures in regular session, with a few others specially called. In 1931, forty-four legislatures met in regular session; in addition there were seventeen or more special sessions of the legislatures of the various states. It appears that only the states of Virginia and Kentucky did not, at one time or another during the year, have their legislative bodies assembled and in action.

Enactments.—The legislators, eager to build during times of stress stronger barriers against fraudulent and worthless securities, sought in many and devious ways to amend existing securities laws. Reports are to the effect that approximately 170 such bills were introduced in 36 states. Resulting legislative changes were made in approximately 26 states, and one state, Maryland, provided for a commission to examine the "Blue Sky Laws" of the various states with a view to recommending changes in securities legislation in that state.

Uniform Securities Law.—Probably the most interesting development has been the adoption by Oklahoma and Florida of the new Uniform Sale of Securities Act, approved by the National Conference of Commissioners on Uniform State Laws and by the American Bar Association during the latter part of 1929, after many years of work on such a measure. While these appear to be the first instances of the adoption of this uniform law, several of the states previously had adopted legislation very similar thereto. This move to make more uniform securities legislation is to be commended and should

lessen the worries of securities dealers desirous of selling issues in two or more states.

LAW AMENDMENTS

California and Connecticut.—In addition to Oklahoma and Florida, the first two states to adopt the Uniform Sale of Securities Act, two other States, California and Connecticut, completely revised and rewrote their securities laws.

Alabama added a new list of definitions of terms used in its securities law and made changes relating to exempt securities and transactions, registration fees, reports to the securities commission, cancellation of registration, and many other features of its previous law; in addition four new sections of a general character were added, all showing the intent of the legislature to make the securities law of Alabama stricter.

Arkansas.—One section of the old law was amended, requiring both foreign and domestic investment companies and dealers to file written consent to service of process on the Commission and to permit the instituting of suits arising out of sales or offers for sale by such companies and dealers. Fifteen new sections were added which touch upon and improve nearly all topics and features of the prior law.

Colorado.—The "Fraudulent Practice Act" was passed supplementing its present "Securities Act." The validity of the Fraudulent Practice Act is now being tested in the Colorado Supreme Court on appeal from the District Court which upheld the Act. Indications point to a confirmation of the District Court's decision by the Supreme Court of the state.

Delaware passed an act conferring upon the Chancellor jurisdiction to enjoin the fraudulent sale or exchange of securities within this state.

PUBLIC PROTECTION OF SECURITIES

Georgia.—The Securities Commission of Georgia was abolished and the Secretary of State charged with the administration of the Securities Act. The former commission was composed of the Attorney General, the Secretary of State and the Commissioner of Commerce and Labor.

Idaho.—The scope of the term "investment companies" was widened and provision made for the inspection of such companies by the department of finance. Exemption of certain classes of securities from the provisions of the Act was provided for.

Illinois.—The most important change in Illinois consisted of the addition of two new classes of securities, "investment contracts" and "investment trust shares", which were made subject to registration and qualification. Other amendments related to certain statements to be printed on bonds or notes secured by real estate, filing of supplemental statements, and to certain exempt securities.

Indiana.—The principal amendments in Indiana were in regard to exemption of securities listed on stock exchanges, repeal of exemption of securities of certain holding companies, repeal by implication of exemption of legal investment securities and certain real estate securities, and elimination of certain provisions of the Securities Act relating to owner's sales of securities, which provisions had earlier been held unconstitutional by one of the Indiana courts.

Iowa.—The amendment eliminated public utilities securities, except railroad securities from the list of exempted securities.

Kansas.—The principal changes were in regard to registered dealers being required to file bonds, the amount of such bonds, the amount of fees payable under "Blue Sky Law" provisions, exemption of securities listed on stock exchanges, contracts and bonds for deeds to real estate located outside of Kansas, in-

spection and investigation of brokers by the bank commissioner, and subsection of general accounts of brokers and securities registered by qualification to supervision by the bank commissioner.

Maine.—One section of the securities law in Maine was amended requiring dealers to file bonds and permitting suits on such bonds by persons damaged in the sale of securities by dealers. The scope of the term "Securities" was widened, the appointment of an assistant commissioner and one or more examiners, provided for, and the filing fees and fees for registration increased.

Maryland.—In addition to a joint resolution authorizing the governor to appoint a commission to recommend changes in its "Blue Sky Law", Maryland amended three sections of its present law, widening its scope so as to include within its provisions, shares, profit-sharing agreements, service agreements, membership certificates and trustees certificates.

Minnesota.—Two additions were made to the list of stock exchanges whose listings are exempt. A new provision was added relating to power of the Commission to deprive an exempt security of its exempt status. Minnesota also passed an act in addition to the present "Blue Sky" provisions to enable the state to enforce more strictly its law in accordance with the spirit of "Blue Sky" legislation. Provisions for the appointment of an assistant attorney-general, as attorney and counsel for the Division of Securities and for the cooperation of the Bureau of Criminal Apprehension in apprehending violators of the Securities Act were held to be unconstitutional by the Attorney General on account of the insufficiency in the title of the Act.

Montana passed amendments widening the scope of the term "investment company", including additional types of securities within the definition of the term "securities", and abolishing appeals to the state board of examiners and providing for ap-

peals directly to courts of competent jurisdiction in case of dissatisfaction with any ruling of the Commission. In the case of "Investors Syndicate vs. Porter", decided August 10, 1931, by the U. S. District Court for the District of Montana, portions of the Investment Law, providing for the cancellation of a permit, were held unconstitutional.

New Hampshire increased the penalties imposed for violations of its securities law.

New Jersey.—The more important changes in New Jersey included the subjection of trusts to the provisions of the "Blue Sky Law", permitting the Court of Chancery to restrain partnerships, associations and trusts, or their officers from exercising any franchises or privileges of such partnership, association or trust, after an injunction order has been issued against the same, and making the use or employment of deception, or any other fraudulent act in connection with the selling of securities, a misdemeanor.

North Dakota amended its law in regard to fees for the registration of agents and the qualification of securities and in regard to the power of the commission to deny application. Further amendments were made as to the suspension and revocation of licenses, exempt securities, agent's license fees, and provision for the payment of a fee by dealers at the time of declaring intention to sell securities, and increasing the fee payable for the qualification of securities.

Violations of two sections of the law were made felonies.

Oregon passed amendments exempting from its act securities senior to any security listed on an approved stock exchange. Amendments were also made regarding the delivery of interim certificates where no immediate delivery of the security sold is made, and to enable persons suffering loss or damage arising out of a violation of the act to sue on the bond filed by the offender.

Wisconsin.—A number of amendments were made, the more important of which relate to the classification of securities, repeal of exemption of certain trust certificates, creation of a new class of securities known as "Unclassified Securities", isolated sales, and brokers' bonds.

EXTENDING PROTECTION

With the passage in Delaware of the act conferring jurisdiction on the Chancellor to enjoin the fraudulent sale or exchange of securities, which is Delaware's first securities law, this leaves only one state, Nevada, and the District of Columbia without "Blue Sky" or securities laws of one form or another. This emphasizes the point that the legislators in the various states are aware of the losses sustained by an ever-gullible public, always ready for get-rich-quick schemes, through the use of fraud and the sale of fraudulent securities and that these legislators are doing their utmost to protect the public from such losses.

INVESTMENT TRUSTS IN THE UNITED STATES

BY LELAND REX ROBINSON

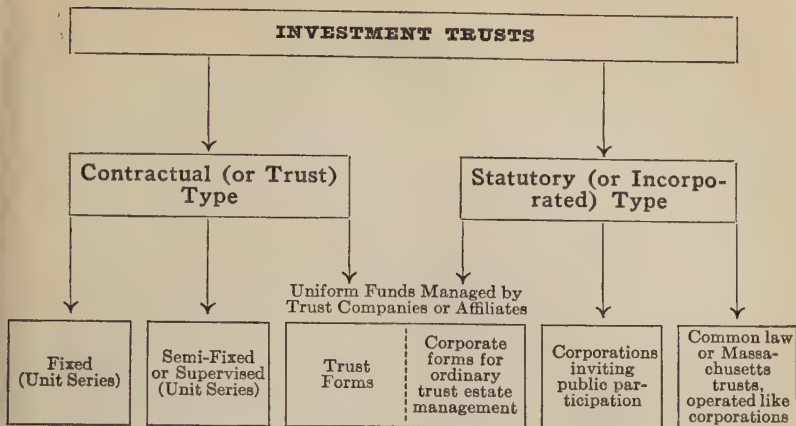
PRESIDENT, SECOND INTERNATIONAL SECURITIES CORPORATION

CLASSIFICATION OF INVESTMENT TRUSTS

Reference to the chart (p. 347) will show at a glance how misleading it may be to generalize about American investment trusts, even in the re-

stricted sense of the accepted definition. It will be noted that there are six principal types, of which three represent the technical "trust" form, and a fourth, though incorporated, should be assimilated to this division.

INVESTMENT TRUSTS IN THE UNITED STATES



That is, they are set up under a special contract, indenture, or trust agreement, in accordance with the terms of which a trust company, which is party to the trust contract, retains legal and physical possession of the securities and/or cash comprising the corpus of the trust, and issues or authenticates certificates of participation therein. The most widely known investment trusts of this kind are the so-called "fixed" and "semi-fixed" trusts now being so actively offered in the United States. They are described in the classification as "unit series" in their make-up because the trust indenture describes a given "unit" of stocks against which certificates representing two thousand, more or less, pro rata shares are issued for public sale. When the trust agreement prevents change in the composition of the "unit" (except in cases of mergers, reorganizations or liquidations) the trust is "fixed"; when some leeway is given (whether under purely arbitrary or less exacting restrictions) to make sales or even substitutions, the trust is "semi-fixed," or supervised as the case may be.

UNIFORM FUNDS

Trust Type.—Among the "uniform funds managed by trust companies or affiliates" are to be found the "uniform trust funds," and, in a few significant instances, the incorporated funds now being applied to the

mingled management of ordinary trust estates where permission so to mingle is specifically given in the instruments establishing the trusts. Uniform trust funds are the means by which several large trust companies enable their clients to share in jointly operated trust funds in round minimum amounts too small to warrant an individual trust estate. Participation involves hardly any more formalities than signing a standardized trust instrument, or becoming a party to the indenture under which the uniform trust is established by the act of subscription. The purpose is to give small estates the supervision and division of risk enjoyed by large ones. The participant, or certificate holder, is both beneficiary and remainderman. That is, the trusts are revocable, or the certificates redeemable, at the option of the participants, at their current values as determined in periodical revaluations. Funds of this kind are not altogether feasible, for several technical reasons involving problems of taxation, accountancy, and investment policies, for that great majority of living or voluntary and testamentary trusts reflecting the peculiar requirements of each testator and separating the interests of life beneficiaries and remaindermen. Application of the economies and advantages of mingled investment for the ordinary types of trust estates may be more conven-

iently made through an incorporated fund, especially in case the trust officers plan an active supervision resulting in shifting of investments, and aim to build up reserves as well as pay out distributions from income.*

Corporate Type.—The corporate type of uniform fund, devoted to ordinary trust estate management, has been worked out by at least three of America's leading trust companies and is being adopted or seriously considered by others. No public participation is involved, these special investment corporations being merely convenient devices employed by trust officers for the investment of all, or part, of the corpus of any trust estate committed to their charge, when permission to make such investments is granted by the testator. Complete service can thus be given to smaller voluntary or testamentary trust estates, with less inconvenience to the trust officers and with the same attention, and equal, or greater, distribution of risk than is enjoyed by the largest estates made possible through cooperative investment.

INCORPORATED INVESTMENT TRUSTS

The second main group has been called the "statutory (or incorporated) type" because it comprises investment trusts organized under the general statutes of incorporation of the several American states, or inviting public participation on substantially the same basis and by means of substantially the same kinds of securities. Unlike the contractual (or trust) type, these investment trust corporations (or common law or Massachusetts trusts operated like corporations) issue shares or stocks which are not redeemable or convertible like trust certificates, and which are shares in an investment enterprise rather than merely certificates carrying a *pro rata* claim to trustee-held units of securities, or funds of

securities and cash. Incorporated investment trusts, inviting public participation through the familiar corporate securities, are all but universal in Great Britain, and in the United States they represent by far the bulk of all investment trust capital. Massachusetts trusts are not so common, but several sizeable trusts take this legal form.

DIVERGENT INVESTMENT THEORIES

The significance of such a classification becomes more apparent when a glance is taken at the differing investment policies followed by the several groups. Not only must there be set apart the fixed trusts, where lack of any continued supervision is the distinguishing factor; but an all-important line of cleavage must be drawn between those investment trusts in which supervision, more or less curtailed, is subordinated to the original purpose of maintaining a given list of earlier chosen common stocks, and that greater number of trusts, funds and companies in which the management exercises broad discretion in utilizing the investment funds at any time. Among these latter are to be found investment trusts under a supervision aiming at best only to "chip off the bad meat to keep the good from spoiling," and still others so actively managed that continued shifting of holdings—from cash to investments, from senior to junior securities, from one bond to another, and from one stock to another—is the normal state, and profits are sought as with a trading company.

From the viewpoint of the type of investments made, equally striking differences appear. The fixed and semi-fixed trusts, with very few exceptions, purchase and hold exclusively the so-called "blue chip" common stocks, which are acquired for long-term investment, as new certificates are sold, regardless of current prices. The uniform trust funds are, as a rule, buyers of bonds, mortgages, or short-term maturities, as well as common stocks. Several of them, as might be expected, emphasize fixed yield and senior investments, and

* For a more complete description, the reader is referred to pages 331-332 of THE AMERICAN YEAR BOOK 1930. Also to "Investment Trusts," *Journal of Commerce*, University of Chicago, Vol. III, No. 3, July, 1930.

combine with these only a "sweetening" of equities. A few are designed to capitalize the long-term investment possibilities of carefully chosen common stocks, but like all other funds managed by trust companies or their affiliates, they require of their managers that full measure of responsibility and that "eternal vigilance" which most trust officers consider "the price of safety." Of the "corporate forms for ordinary trust estate management" it may be said that these are conducted under principles not departing widely from those governing discretionary trustees of large estates in which common stocks are not necessarily taboo.

INVESTMENT TRUST CAPITALIZATION

Until greater consistency in terminology is obtained, both exclusively and inclusively, it is impossible to fix the investment trust capital in the United States with any degree of exactitude. Probably as up-to-date and reliable a compilation as any is to be found in *Keane's Investment Trust Monthly*, which in the issue of November, 1931, gives the aggregate "investment trust financing" for the years 1924 to 1930 inclusive as in the neighborhood of \$3,500,000,000. This figure does not, of course, include several uniform funds, both incorporated and unincorporated, managed by trust companies and affiliates, but these would presumably not greatly change the total. Owing to their continuous offering, the amounts paid in for fixed and semi-fixed trust certificates are estimated purely, and make up at least \$600,000,000 of the foregoing aggregate. Of the remaining amount, coming to about \$2,900,000,000 (there has been very little additional investment trust financing, except for the fixed trusts, in 1931), outstanding bonds and debentures accounted for about thirteen per cent; but it is significant that whereas in 1927 the amounts of stocks and bonds offered were nearly equal, the following year witnessed over five times as great an offering of stocks as of bonds; 1929 saw a huge financing by stocks with a bond total even less

than in 1927; and 1930 brought a sharp reversal with bonds far in the leadership.

PRESENT STATUS AND OUTLOOK

The year 1931 has been one of relatively little activity on the part of investment trust companies. Save in exceptional instances their funds have been principally invested, and the successively lower levels in security prices militated against their obtaining large new sums for further investment at these lower levels either by sales of holdings earlier obtained or by new issues of their own capital. Short selling is not a common practice among investment trusts, and their portfolios for the most part have registered the impairment in asset values to be expected from general market declines. This impairment has been accentuated in the common, and even preferred, stocks of many companies which have bonds outstanding, a "leverage" factor which, of course, operated in the opposite fashion during the buoyant markets of 1928 and 1929.

Impairment of capital, at the current market prices of their holdings, has resulted in the writing down of stated values on their outstanding preferred and/or common stocks on the part of numbers of companies. This has, it is claimed, overcome the legal obstacles, under the statutes of some states, to payment of dividends, even though earned from interest and dividend income alone, when asset values are less than amounts credited to paid-in capital. These measures, in addition to the frequent instances of purchase and retirement of bonds, debentures and preferred stocks at less than their liquidation values, have built up capital reserves for many companies. In turn, these reserves have been utilized to absorb heavy losses resulting from sale of undesirable or rapidly depreciating assets.

Such selling of their investments as has occurred during the last year has been directed by investment trust companies toward liquidating undesirable positions, and has not been to any large extent of a necessitous

character. Relative freedom from bank loans and a conservative ratio of long-term borrowing, in the aggregate, account for this circumstance. It would appear that much has been accomplished toward readjustment of fundamental investment positions, despite the fact that, with a few notable exceptions, a merger movement has not materialized in anything like the proportions expected in many quarters.

Segregation of profit and loss from regular income account has accompanied the pressure to take losses by withdrawing from unsatisfactory investment positions, and the establishment of special reserves to absorb these losses in whole or in part. This contrasts with the earlier policy of writing such realized profits and losses directly into income account, a practice at variance with the universal methods of the British investment trusts, but of material help in boosting earnings reported during 1928 and 1929. It is to be expected that the system of carrying cash profits and losses directly to surplus, in one way or another, will become firmly rooted in the United States, and not be abandoned when red gives way to black again.

General segregation, or elimination of profits and losses from the income statements, has resulted partly from the unhappy experiences of the past two years, partly from an appreciation of the superiority of the British system in this regard, and partly from the published recommendations and requirements of the New York Stock Exchange re-listing of investment trust companies. It should also be noted that much progress is being made in accuracy of accounting, completeness of reports—including full investment lists, conservation in dividend payments, and clarity in capital structure. Current indications point to a healthy realism in the viewpoint of investment trust managers, many of whom are convinced that broad diversification of holdings in the future must embrace senior securities as well as equities, that funded indebtedness should only be incurred when there is a proportion of bonds

in the portfolio, that current dividends should be debited to income from interest and dividends alone, and that equity should be built up for the common stockholders by regularly plowing back for reinvestment a part of the cash earnings.

FIXED TRUSTS

Progress has similarly been made in adaptation of fixed and supervised (unit series) investment trust instruments, and in the more careful preparation of descriptive circulars. Here, again, the influence of the New York Stock Exchange has been felt, this time in rulings governing the conditions under which partners in member firms may have active association with depositor groups sponsoring these trusts. A large number of actively offered fixed trusts have qualified, under the Exchange rulings, for inclusion in the list of offerings with which association of member firms has been found unobjectionable. This has necessitated a radical departure in sales representation on the part of several groups which had made their chief plea on the score of what might have resulted if the given list of stocks had been set up under an identical trust indenture ten or twenty years previously. Moreover, the Stock Exchange has required that trustee charges during the life of the trust, sales commissions and other merchandising and syndicate loading should be uniformly stated in order to permit of comparison from offering to offering and to disclose clearly the aggregate charge upon the investor.

Significance attaches to the emphasis placed during 1930 upon the "cumulative" as over against the "distributive" type of fixed trust. The latter, returning capital as a result of selling rights, stock dividends, and split-ups and distributing the proceeds, gave an appearance of large yield when such rights and split-ups were numerous and doubtless operated to the benefit of certificate holders in immediately converting into cash instruments destined to lose a large part or all of their value in the débâcle of 1930-1931. At present, however, there are few or no extras

BANKING AFFAIRS

of this sort, while a general impression that 1932 should witness improvement encourages the retention of any stock dividends, split-ups or rights. An active campaign has been conducted in several quarters to effect

exchange of earlier for later forms of fixed trust issues, in the expectation that advantages of the newer forms of set-up will more than compensate the investor for the double charge thus involved.

BANKING AFFAIRS

By GURDEN EDWARDS

SECRETARY, ECONOMIC POLICY COMMISSION, AMERICAN BANKERS ASSOCIATION

BANKS AND BANKING CONDITIONS

Number and Resources.—There were 22,071 banks of all classifications in the United States on June 30, 1931, with aggregate resources of \$70,210,000,000. This was a decrease of 2,008 banks as compared with the number on the corresponding date in 1930, and a drop of \$3,810,000,000 in point of resources. These data reveal that the decrease in numbers was at a markedly greater rate even than for the historic year 1930 which recorded a reduction of 1,251 banks, while the contraction in resources is a reversal of trend, since the 1929-30 period showed a rise of \$1,845,000,000. Aggregate capital, surplus and undivided profits of American banks June 30, 1931 amounted to \$9,475,000,000, a drop in a year of \$535,000,000 in these consolidated items, as compared with a \$200,000,000 rise the previous year. Total deposits were \$56,865,000,000, also a decrease, amounting to \$2,980,000,000 as compared with an increase of \$1,940,000,000 recorded for this figure the preceding year.

Economic Difficulties.—These reactionary changes in bank conditions were consonant with the basic economic and financial phenomena of the year. General business depression and lower commodity price levels called for smaller total volumes of money and, therefore, caused a shrinkage in commercial banking loans and deposits. In common with all lines of business a larger number of banks got into difficulties and the highest rate of failures in this field in history contributed to the losses in capital funds

and resources. Public uneasiness caused a great volume of withdrawals by panic-stricken depositors, whose hoardings of these funds further increased not only banking but general economic difficulties. Continued catastrophic unemployment conditions were reflected in necessitous reductions in savings deposits.

Shrinkage of Banks By Classes.—Official reports on banks by classes show there were on June 30, 1931, 6,805 national banks, a drop in a year of 447 in this class; 12,259 state chartered commercial banks, a drop of 1,323; 1,469 trust companies, a drop of 95; 1,254 savings banks, a drop of 66; and 284 reported private banks, a drop of 77. Thus, as these figures show, every class of bank suffered in the general shrinkage in numbers. Consolidation of banks into larger units both in city and country districts, largely through necessity or expediency, continued to be an important factor in reducing the number of banks during 1931 as in 1930, giving the nation fewer but larger and stronger banking institutions on the general average. The more drastic factor, however, was the continued acute scale of bank failures.

BANK FAILURES

Economic Factors.—Between June 30, 1930 and June 30, 1931, official reports show there were 1,553 bank suspensions, tying up deposits of \$1,086,843,000, as compared with 765 banks closed with deposits of \$345,013,000 in the previous comparable period. Conditions became even

more acute in the latter part of 1931 and in October alone 512 banks were closed with deposit liabilities of \$566,686,000. No large banks were included among all these failures and relatively few were in large cities, the great majority occurring in smaller cities and in the rural districts and consisting of banks far below the average in size. The causes were primarily the reactions from the general industrial, commercial and financial depression which fell upon the small banks in rural places with particular severity, due to their lack of sufficient capital strength and diversity or vitality of business environment to withstand adversity of the cumulative intensity of 1931. The impairments of investment securities and business obligations making up banking assets, as a result of the general economic breakdown, coupled with unreasoning runs by panic-demoralized depositors brought about by a general decay of public confidence, were more destructive than any but exceptionally strong banking institutions could withstand.

President Hoover Takes Action.

—Cognizance was taken of this situation as a public danger by President Hoover in October. He pointed out that the impairment of bank assets was due to economic and psychological forces beyond the control of banking. People were unreasonably clamoring for their deposits on one hand. On the other the slowness or inability of commercial borrowers to repay their loans, the steady melting away of the market values of even the soundest bonds in which bank funds were invested or by which loans were secured and the disastrous depreciation of real estate underlying mortgage loans made it impossible for many banks to convert their assets into cash rapidly enough or in large enough volume to meet their customers' demands. Even banks not pressed by depositors' demands for cash found that the continued drop in quoted securities values was so far undermining the current appraisal of their holdings as to create a technical impairment of their capital structures. In this emergency bank supervisory authorities granted a measure of relief by

allowing unquestionably sound securities to be carried at par rather than at market quotations, as being a fairer representation of intrinsic values. An especially difficult aspect of this situation was the fact that the failure to earn fixed charges by a number of railroads would require the elimination of the bonds of these properties from the lists of investments which are legal under the laws for savings bank and many trust funds unless relief measures were passed. Another critical technical difficulty that confronted the banks was that a large part of these so-called "frozen assets"—that is, notes of customers who could not repay or securities that could be converted into cash only at a ruinous loss—were not eligible for rediscount or as the basis of loans at the Federal Reserve banks.

Cooperative Banking Pool.—In view of these exigencies President Hoover proposed, following emergency conferences with leading bankers, the organization of a cooperative banking pool, authorized to raise funds up to a billion dollars through the sale of debentures, primarily to banks, and empowered to rediscount sound, though frozen, assets of any properly managed bank in need of help, which were not eligible for such purpose at the Federal Reserve Banks. This proposal was announced Oct. 7, in the midst of the annual convention of the American Bankers Association, which represents three-fourths of the banks and 90 per cent of the banking power of the nation, and was given immediate approval and pledge of cooperation by that organization. Within the month the National Credit Corporation to carry out the plan was formerly incorporated, organized with the main capital and administrative unit in New York and advisory loan dispensing associations in the twelve Federal Reserve Districts and promptly put in operation. The effects of this were to relieve somewhat the pressure on bankers to convert assets into cash under ruinous conditions in order to maintain an ultra-liquid condition against the actual or threatened demands of their customers, and also to relieve the

anxiety and disposition of depositors to withdraw their money as their confidence was restored that their banks, backed up by the President's cooperative pool, could meet their obligations.

Mobilizing Banking Support.—There followed a marked subsidence of bank troubles, and failures dropped in November to less than half the number reported in October. In support of this plan of action Harry J. Haas, president of the American Bankers Association made the following statement: "It is incumbent upon every bank to give the plan active support. This is essentially a cooperative undertaking whereby banks throughout the country may be enabled to mobilize their resources and utilize them more effectively. The first step is for all banks to subscribe for their full quotas of the National Credit Corporation's gold notes. It is especially important that all banks participate so that the entire banking system will be united to increase the effectiveness of their financial services to their communities. The corporation's plan of organization and procedure has been so devised that the additional credit facilities which it will provide will meet the constructive requirements of the rural districts as well as the cities. It will marshal the banking resources of the country by creating a national institution of a billion dollars to be loaned when necessary to banks which have assets in their portfolios that are thoroughly sound but are not eligible for loans at federal reserve banks.

"The National Credit Corporation definitely puts into practical effect the central point in President Hoover's plan for renewing the commercial and industrial activity of the nation as proposed in his statement to the public of Oct. 7. It represents, therefore, an instrumentality that should have a far-reaching effect in restoring the confidence of the public. There is no citizen in the United States but will benefit in very practical ways from the results of the operation of this forward-looking plan of cooperation, which may be regarded as one of the most constructive steps that

have been taken in this country toward the revival of sound business activity.

"The plan not only has been formulated by the country's leading banking authorities, but also will be carried out locally as well as nationally by banking representatives who have given their time and thought to this undertaking as a real public service. I have examined the detailed formulation of the working plans as developed by the incessant labors of some of the Nation's leading bankers who have undertaken to put it into practical operation in single-minded devotion to the national welfare, and I am able to say without reservation that the National Credit Corporation as set up by them constitutes a practical, sound and efficient means for carrying out President Hoover's proposal."

Further Relief Measures.—While this measure afforded a respite it was not a complete remedy for the banking emergency nor a solution of the underlying economic difficulties. In the latter weeks of the year further measures, also suggested by the President, were under consideration, notably a method for easing the home mortgage situation which was complicated by the destructive depreciation of real estate values, and a plan for further aiding banks over a period of economic reconstruction by means of a governmentally financed institution along the lines of the War Finance Corporation.

Banking Structure Strong.—Despite the prominence given to banking troubles by public discussion of them, the banking structure as a whole demonstrated in many ways its impregnable strength. At the convention of the American Bankers Association the Economic Policy Commission of that organization pointed out clearly that the number of banks and volume of their resources involved in trouble were relatively but a small fraction of the whole, adding this comment: "The figures of closings are but one aspect of the picture. They are necessarily the conspicuous and sensational aspect. It is news if one bank in a community closes. It

X. BUSINESS AND FINANCE

is not news that over 22,000 banks all over the country remain open and go on quietly and efficiently serving their communities, helping tide many business enterprises over their difficulties, helping many concerns to earn money, helping create the economic activities that mean payrolls and spending power in their zones of influence, and faithfully keeping guard over the working capital and savings funds of their depositors. It surely stands strikingly to the credit of the banking profession that, during this period of unparalleled international economic depression, this vast majority of bankers have so competently, so courageously and so successfully met their difficulties and obligations. The effects of the drought, the demoralization of agriculture, the stagnation of industry, the breakdown of trade, the inability of so many heretofore desirable customers to meet their obligations to the banks, the impairment of public confidence by mob-scares and false rumors resulting in unreasonable runs, the abnormal depreciation of quoted security values even in the most wisely conceived investment accounts, the utter collapse of real estate values—all these things have occurred on a nationwide and worldwide scale with unprecedented severity. The effects of every one of them have assailed the banks with destructive forces because they are of the very essence of a bank's economic substance. Yet, as we have shown, the great bulk of our banking deposits has been protected without harm. And our banks in a vast majority have continued to serve, support, and strengthen their customers and their communities with unflagging and unconquered devotion."

Banks Withstand Gold Drain.—A sensational demonstration of the strength of the American banking system was given immediately following the utterance of these remarks. Despite the continuance of domestic troubles, American banking withstood without faltering a drain of gold to foreign countries, that within half a dozen weeks ran to almost \$750,000,000, the worldwide shock of the abandonment of the gold standard by England followed by several other nations and the handicap of foreign financial conditions that cast additional burdens upon the shoulders of this country's institutions.

AMERICAN BANKERS ASSOCIATION CONVENTION

The American Bankers Association, the national organization of banking including in its membership the great majority of the 22,000 national and state commercial banks, trust companies and savings banks in the nation, held at Atlantic City, New Jersey in 1931 its fifty-seventh annual convention. Los Angeles was designated as the meeting place for the 1932 convention. The general officers of the Association elected for 1931-1932 were: President, Harry J. Haas, Vice President First National Bank, Philadelphia, Pennsylvania; First Vice President, Francis H. Sisson, Vice President, Guaranty Trust Company, New York City; Second Vice President, F. M. Law, President First National Bank, Houston, Tex.; Treasurer, P. D. Houston, Chairman of Board American National Bank, Nashville, Tenn.; Executive Manager, F. N. Shepherd, American Bankers Association, New York City.

TRUST BANKING

BY GILBERT T. STEPHENSON

VICE PRESIDENT, EQUITABLE TRUST COMPANY, WILMINGTON, DEL.

WILLS

Percentage Increase.—The last annual nation-wide survey of trust

institutions, which was completed as of December 31, 1930, but not available until February, 1931, is a striking

TRUST BANKING

revelation of the remarkable stability and dependability of trust business through foul weather as well as fair. The survey shows that trust companies and banks were nominated executor and/or trustee under 48,812 wills in 1930 as compared with 36,193 wills in 1929 which represents an increase of 35 per cent. The percentage of increase was precisely the same as that of 1929 over 1928.

Analysis.—Nominations to executorships and/or trusteeships under will refer to the wills of persons who are still living, most of which wills will not become operative very soon and some of which will, of course, never become operative. To offset this, these figures do not include the trust companies and banks that have not reported their figures, nor do they include the wills prepared by the testators themselves or by their attorneys, and not reported to the institutions nominated executor and/or trustee. So, it is quite evident that the percentage of increase in nominations is really more significant than the number of wills under which trust companies and banks have been nominated. It is not surprising that the number of appointments to executorships and/or trusteeships under will has not been materially affected by business conditions, because these appointments are really the result of nominations that had been made in previous years. In fact, the stress and strain upon men of affairs during 1930 may have increased to some extent the mortality rate which may account, in some measure at least, for the increase in the number of appointments.

LIVING TRUST AGREEMENTS

Appointments and Value.—The year 1930 is the first time figures of appointments of trust companies and banks under living trust agreements have been assembled and compiled. As to these, figures from over 560 trust institutions have been received. These trust companies and banks report that they have been appointed trustee under living trust agreements 9,092 times in 1930 as compared with 6,295 times in 1929 and that the

aggregate value of properties in living trusts received during 1930 was \$1,013,769,436 as compared with \$603,926,218 in 1929. This represents an increase of 44 per cent in the number of appointments and 67 per cent in the value of properties in new living trusts in 1930 over 1929.

Life Insurance Trusteed.—Since the amount of new life insurance written during 1930 is almost as much as that written during 1929—lacking only 4 per cent—it is to be expected that the amount of life insurance trusteed during 1930 would be as much or more than that trusteed during 1929. Such is the case. On the basis of individual reports and of estimates from a number of cities throughout the country, it appears that during 1930 at least \$1,560,000,000 of life insurance was trusteed, as compared with \$1,200,000,000 during 1929. At the end of 1929, it was estimated, there was \$2,500,000,000 of trusteed life insurance. If \$1,560,000,000 was added during 1930, then over \$4,000,000,000 of the \$108,000,000,000 of life insurance is now payable to trust companies and banks as trustee to be administered in accordance with the terms of life insurance trust agreements. The rate of increase during the year 1930 was so stupendous that at the end of 1930 nearly 4 per cent of the \$108,000,000,000 of life insurance, as compared with 2½ per cent at the end of 1929, is covered by life insurance trusts.

GENERAL SUMMARY OF GROWTH

A summary of the growth in trust business of trust companies and banks during 1930 is as follows: In the number of nominations of trust institutions under wills that have not yet become operative, the rate of increase during the year was 35 per cent. The same rate of increase was maintained in the number of appointments under wills offered for probate during the year. The rate of increase of living trusts during the year was even more marked, 44 per cent in number and 67 per cent in volume. There was an increase of 61 per cent in the volume of trusteed life insurance. On the

X. BUSINESS AND FINANCE

basis of these figures, it would appear that the amount of trust business in hand and in prospect of the trust companies and banks of the United States is doubling about once every two years.

The rate of increase of trust business during 1930, unexplained, is calculated to leave an erroneous impression about the proportion of the nation's wealth that is now or soon will be in the hands of the trust departments of its trust companies and banks. In the face of such a rate of increase it is easy to argue that it will not be long before the bulk of the nation's wealth will be under the control of its trust institutions. It has been estimated recently that at the present rate of increase of trust business, "virtually all our industrial wealth will be unavailable for commercial investment, in 75 or 100 years." But anyone who makes such a statement or indulges in such a prophecy is forgetful of the fact that the great bulk of property that passes into the hands of trust institutions does not remain there indefinitely or even for any great length of time. Estates in the hands of trust companies and banks as executors and administrators are transitory and, as a rule, are distributed to the devisees and legatees or heirs and next of kin within a year's or, at most, two years' time. Estates in the hands of trust institutions as guardians for minors are distributed when those minors attain their majority. Estates in the hands of trust companies and banks as trustees under will or under living trust agreements are also being distributed as the beneficiaries attain stated ages or as they die. All of which means that the stream of property flowing through the trust companies and banks back into the channels of trade is approximating in volume the stream that is passing in the first instance into these institutions for administration.

TRUST INSTITUTIONS

According to the best estimates obtainable, there are 4,247 active trust institutions classified as:

Trust Companies.....	1,414
State Banks.....	774
Savings Banks.....	230
National Banks.....	1,829

Total..... 4,247

Is the number of trust institutions increasing or decreasing or remaining the same? If one takes into account only the last five years, he finds that, outside of national banks, the number is not increasing. There were 2,701 trust institutions, other than national banks, reporting in 1925; but only 2,418 in 1930. This falling off in number has been due, of course, to mergers and closings.

But if one takes into account the last fifty years, he finds that there has been a striking increase in the number of trust institutions, as shown by the following figures:

Year	No. Trust Institutions
1875.....	35
1885.....	40
1895.....	242
1905.....	683
1915.....	1,777
1925.....	2,701

These figures do not include national banks, because they were not authorized to exercise trust powers until the adoption of the Federal Reserve Act in 1914. If they, too, are included, there are at least 4,247 institutions actually doing, and fully 1,000 more authorized to do, trust business in 1930, as compared with 35 in 1875.

TRUST RESOURCES

Based on the survey of non-national trust institutions made by the Trust Division of the American Bankers' Association and on the report of the Comptroller of the Currency for national banks, it is found that the resources of all trust institutions reporting for 1930 are as follows:

Trust Institutions	Resources
Trust Companies.....	\$15,283,548,463
State Banks.....	7,866,448,152
Savings Banks.....	737,343,651
National Banks.....	23,529,097,073
Total.....	\$47,416,437,339

In 1875 the resources of trust institutions aggregated only \$122,890,175; in 1900, \$1,330,160,343; in 1930, \$47,416,437,339.

THE FEDERAL RESERVE SYSTEM

THE FEDERAL RESERVE SYSTEM

BY CARL E. PARRY

ASSISTANT DIRECTOR OF RESEARCH AND STATISTICS, FEDERAL RESERVE BOARD

RESERVE BANK CREDIT

During the twelve months between November, 1930 and November, 1931, the volume of reserve bank credit increased by \$920,000,000. The principal reasons for this growth were an increased demand for currency and an export movement of gold. There was also a transfer of \$145,000,000 of funds employed by foreign central banks in the American market into the form of deposits at the reserve banks, which has the effect of a withdrawal of funds from the market and consequently increases the demand for reserve bank credit. An offsetting factor was a decrease of about \$300,000,000 in the reserve requirements of member banks, which reflected a large decrease in their deposit liabilities. A summary of the changes in the volume of Federal reserve bank credit outstanding and of the factors in changes in this volume is presented in the table following:

RESERVE BANKS CREDIT OUTSTANDING AND FACTORS IN CHANGES

(Averages of daily figures. In millions of dollars.)

	Week Ending		Change
	Nov. 28, 1931	Nov. 29, 1930	
Bills discounted.....	691	246	+445
Bills bought.....	487	172	+315
United States securities..	727	597	+130
Other reserve bank credit.....	49	22	+ 27
Total reserve bank credit.....	1,954	1,037	+917
Monetary gold stock...	4,402	4,567	-165
Treasury currency-adjusted.....	1,773	1,787	- 14
Money in circulation...	5,486	4,580	+906
Member bank reserve balances.....	2,114	2,403	-289
Non-member deposits, etc.....	171	25	+146
expended capital funds.....	358	383	- 25

INCREASED DEMAND FOR CURRENCY

Notwithstanding further decline in business activity and in the level of prices in 1931, there was a large increase in the demand for currency. At its height in October, 1931, the increase from a year ago approximated \$1,000,000,000, representing chiefly a growth in the amount of money in the hands of the public, but also some increase in the vault cash of member and non-member banks and some growth in the amount of American currency in circulation abroad. The principal cause of the increased demand for currency was the disturbed banking conditions which caused the public to withdraw deposits from banks and hold them in the form of currency. Toward the end of October, there was a change in sentiment and a return flow of currency from circulation. Toward the end of November, furthermore, when the usual pre-holiday seasonal outflow began, it was in less than the usual seasonal amount, indicating a continued release of currency.

LOSS OF GOLD

Next to the increase in the currency demand during the year the principal reason for increased demand for reserve bank credit was the export of gold to foreign countries. The export movement began in September and followed upon a continuous inflow of gold which had lasted since the beginning of 1930. During the six weeks following the suspension of gold payments by Great Britain Sept. 21, the United States lost \$725,000,000 in gold, the largest gold movement during a similar period from any country at any time. Notwithstanding the large drain on the country's stock of gold during this six-week period, however, the gold stock at the end of the period at \$4,300,000,000 was still larger by about \$200,000,000 than it

X. BUSINESS AND FINANCE

was in the middle of 1928. The loss of gold after the middle of September, therefore, was smaller than the gain from the middle of 1928 to the autumn of 1931. Toward the end of October the outflow of gold came to an end and was succeeded by a renewed inward movement, largely from Japan.

DECREASE IN MEMBER BANK CREDIT

As already mentioned, an offsetting factor to the effect of currency and gold withdrawals on the demand for reserve bank credit was a decline in member bank reserve requirements, reflecting a decrease in the banks' own deposit liabilities. The deposits of member banks, after increasing in the summer and early autumn of 1930, declined continuously during the period from November, 1930 to November, 1931. For the twelve months net demand and time deposits of all member banks declined by \$3,875,000,000, or about 12 per cent. The decline began at the time of a number of important bank failures in different parts of the country, was accentuated in December of 1930 by the suspension of a large bank in New York City and again in the spring of 1931 by a series of suspensions in Chicago, and became most pronounced during the two months after England's suspension of the gold standard in September. At member banks in leading cities, during the 8-week period from Sept. 30 to Nov. 25, the decrease in net demand deposits was \$1,000,000,000 and in time deposits \$550,000,000. During this two-month period the rapid decrease in deposits reflected withdrawals of gold for export and of currency for domestic use, as well as the use of deposits for the liquidation of loans and investments of member banks. During the year as a whole, however, the principal element in the decline of member bank deposits was the decrease in their loans and investments, which amounted altogether for the member banks in leading cities to \$2,500,000,000. There were large decreases both in loans on securities and in "all

other" loans, largely commercial, which were only partly offset by an increase in investments. Holdings of United States Government securities increased by \$925,000,000 during the year, while holdings of other securities decreased by \$275,000,000.

ASSETS AND LIABILITIES OF REPORTING MEMBER BANKS

(Amounts in millions of dollars)

	Nov. 25, 1931	Nov. 26, 1930	Change
Loans and investments			
—total.....	20,908	23,381	-2,473
Loans on securities....	5,831	7,761	-1,930
All other loans.....	7,574	8,766	-1,192
United States securities.....	4,017	3,093	+ 924
Other securities.....	3,486	3,761	- 275
Net demand deposits....	12,206	13,882	-1,676
Time deposits.....	6,211	7,487	-1,276
Borrowings from Federal reserve bank.....	397	84	+ 313

BROKERS' LOANS

Brokers' loans declined further to the lowest level in more than 10 years, reflecting decreased activity in the security markets and declining security prices. The volume of borrowings at New York City by members of the New York Stock Exchange at \$730,000,000 on Nov. 30 was \$200,000,000 less than at the lowest point reached during the depression of 1921, and \$7,800,000,000 below the peak of Sept. 30, 1929. The street loans of lenders other than banks, which had risen in the autumn of 1929 under the influence of high rates to a level above \$4,000,000,000, and which declined sharply at the time of the break in the stock market, continued to decline in 1930 and 1931 and were in the autumn of 1931 at the level of about \$200,000,000. On Nov. 16, the placing of such loans by members of the New York Clearing House Association was forbidden by an amendment to the constitution of the Association, which applies not only to members but also to other banks in New York City that clear through members, with the result

THE FEDERAL RESERVE SYSTEM

that after that date brokers' loans for the account of non-banking lenders declined to a small figure.

BANK SUSPENSIONS

Number and Deposits.—Bank suspensions continued in large numbers in 1931. More than 1,900 banks suspended operations during the period January-November, with deposits at the time of suspension ap-

proximating \$1,500,000,000. There were suspensions in all Federal reserve districts, and during the 11 months they were more numerous than in 1930 in all districts except Boston, Atlanta and St. Louis. Of the 1,932 suspensions reported to the end of November, 1,497 were of non-member banks and 435 of member banks, including 345 national banks and 90 state member banks.

BANK SUSPENSIONS

(Banks closed to public on account of financial difficulties by order of supervisory authorities or directors of the bank. Figures of suspensions include banks subsequently reopened.)

Federal Reserve District	Number of Banks				Deposits (In millions of dollars)			
	1928	1929	1930	1931*	1928	1929	1930	1931*
Boston.....	1	.....	12	7	1.1	.....	36.2	16.5
New York.....	3	6	11	52	1.4	19.1	187.3	121.4
Philadelphia.....	1	3	10	93	0.4	3.3	43.4	150.0
Cleveland.....	17	14	41	165	7.6	8.4	41.9	399.2
Richmond.....	43	59	152	164	13.3	19.6	85.6	93.0
Atlanta.....	66	119	140	117	35.4	62.4	91.2	47.1
Chicago.....	87	93	266	536	21.7	35.6	111.3	393.6
St. Louis.....	57	44	358	210	12.8	9.4	182.2	59.4
Minneapolis.....	94	84	156	254	17.1	15.3	24.1	57.0
Kansas City.....	88	193	137	192	15.6	39.2	28.9	46.3
Dallas.....	24	11	41	87	7.4	1.9	16.5	53.6
San Francisco.....	10	16	21	55	4.8	20.3	16.1	31.0
Total.....	491	642	1,345	1,932	138.6	234.5	864.7	1,468.1

* 11 months; figures preliminary.

Reopenings.—During the 11-month period, 242 banks were reopened, with deposits of \$136,000,000, which compares with 147 reopened in the year 1930, with deposits of \$62,000,000.

Causes of Failures.—A factor in causing bank failures during the year was the withdrawal of deposits from the banks in the form of currency. The cumulative withdrawal of currency not only limited the ability of the banks immediately affected to extend credit, but in addition influenced other banks as a precautionary measure to place their assets in liquid form by sales of securities and restriction of credit. In view of these conditions President Hoover announced Oct. 7, that arrangements would be made by the banks of the country to form a national institution of at least \$500,000,000 to rediscount banking assets not now eligible for

rediscount at the Federal reserve banks.

National Credit Corporation.—This institution was promptly organized under the name of the National Credit Corporation, with authority to issue \$1,000,000,000 of gold notes and on the basis of subscriptions from banks throughout the country began in November to lend or advance funds to banks and groups and associations of banks, for the purpose of assisting them to further the stabilization of financial and economic conditions and to serve better the credit needs of their respective communities. In proposing the creation of this corporation the President stated that if necessity should require he would recommend to Congress the creation of a finance corporation similar in character and purpose to the War Finance Corporation, with available funds sufficient for any legiti-

X. BUSINESS AND FINANCE

mate call in support of credit. The President has since made this recommendation in his annual message to Congress, and bills for the creation of such a corporation have been introduced in both houses of Congress. The number of bank suspensions in November was considerably smaller than in October.

MONEY RATES

In the early months of 1931, the discount rates of the Federal reserve banks, which had been lowered substantially in 1930, were reduced still further, and they remained at a low level throughout the summer. The rate at the Federal Reserve Bank of New York, which at the end of 1930 stood at 2 per cent, was further reduced to $1\frac{1}{2}$ per cent in May of 1931, while the rates at other reserve banks, standing at the beginning of the year at 3 and $3\frac{1}{2}$ per cent, had been reduced by the end of May to 2 per cent at Boston, $2\frac{1}{2}$ per cent at Cleveland, Chicago, St. Louis, and San Francisco, and 3 per cent at all the other reserve banks except Minneapolis, which remained at $3\frac{1}{2}$ per cent. During the same period buying rates on acceptances in effect at the Federal Reserve Bank of New York for the shorter maturities were reduced from $1\frac{3}{4}$ per cent to one per cent, and money rates in the open market decreased further, for call money to the level of $1\frac{1}{2}$ per cent, for bankers' acceptances to $\frac{7}{8}$ per cent, and for commercial paper to 2 per cent. During the first 8 or 9 months, furthermore, rates charged customers declined from 4.16 to 3.93 per cent at New York, from 4.67 to 4.47 at 8 other Northern and Eastern cities, and from 5.42 to 5.26 at 27 Southern and Western cities. Late in September and early in October, however, at the time when the demand for gold for export and the demand for currency were increasing rapidly, the official buying rates on acceptances were advanced by successive steps to $3\frac{1}{2}$ per cent, and discount rates were advanced at all the reserve banks except Minneapolis; at the end of November discount rates were as shown by the

accompanying table. Rates at the same time became firmer in the open market, advancing by about one per cent for call money to the $2\frac{1}{2}$ per cent level, by about $2\frac{3}{8}$ per cent for acceptances to the $3\frac{1}{4}$ per cent level, and by about 2 per cent for commercial paper to the 4 per cent level. In November, after some improvement in conditions, the official bill rates on the shorter maturities were again reduced by one-eighth per cent.

DISCOUNT RATES

(Rates on all classes and maturities of eligible paper)

Federal Reserve Bank	Rate in Effect on Dec. 1	Date Established	Previous Rate
Boston.....	$3\frac{1}{2}$	Oct. 17, 1931	$2\frac{1}{2}$
New York....	$3\frac{1}{2}$	Oct. 16, 1931	$2\frac{1}{2}$
Philadelphia...	$3\frac{1}{2}$	Oct. 22, 1931	3
Cleveland.....	$3\frac{1}{2}$	Oct. 24, 1931	3
Richmond.....	4	Oct. 20, 1931	3
Atlanta.....	$3\frac{1}{2}$	Nov. 14, 1931	3
Chicago.....	$3\frac{1}{2}$	Oct. 17, 1931	$2\frac{1}{2}$
St. Louis.....	$3\frac{1}{2}$	Oct. 22, 1931	$2\frac{1}{2}$
Minneapolis...	$3\frac{1}{2}$	Sept. 12, 1930	4
Kansas City...	$3\frac{1}{2}$	Oct. 23, 1931	3
Dallas.....	4	Oct. 21, 1931	3
San Francisco..	$3\frac{1}{2}$	Oct. 21, 1931	$2\frac{1}{2}$

INTERNATIONAL GOLD MOVEMENTS

International gold movements in the first 8 months of 1931, as in the year 1930 as a whole, were characterized by continued loss of gold on the part of Latin-American and other outlying countries whose balance of payments were adversely affected by the trade depression, and further growth in the gold stocks of the United States and France, but other important countries losing gold during this period were Germany, from which there were large withdrawals in June at a time of acute financial disturbance in Central Europe, and England, from which short-term balances were withdrawn in considerable volume in July. The pressure on Germany was relieved toward the end of June by the extension of a central banking credit of \$100,000,000 to the Reichsbank, in which the Fed-

THE FEDERAL RESERVE SYSTEM

eral reserve banks participated, and by the arrangement, at the initiative of President Hoover, of a year's moratorium on all intergovernmental payments, including reparations. During August and part of September the loss of gold from England was halted for several weeks by the negotiation of credits by the Bank of England with the Bank of France and with the Federal reserve banks and by the British Government with private bankers of France and the United States. Exhaustion of these credits, which amounted altogether to \$650,000,000, led on Sept. 21 to the suspension of gold payments by Great Britain, with similar action soon afterwards in the Scandinavian countries, Japan, and elsewhere, and during the next few weeks, when there

were extensive drafts on the gold stock of the United States, the gold reserves of Belgium, France, Netherlands, and Switzerland increased substantially, and served to assist these countries in remaining on a gold basis. For the 10-month period as a whole the principal changes in central gold reserves were decreases of about \$300,000,000 in the United States, \$250,000,000 in Germany, \$150,000,000 in Argentina, and \$70,000,000 in Japan, and increases of about \$450,000,000 in France, \$300,000,000 in Switzerland, \$165,000,000 in Belgium, and the same amount in Netherlands. During the same period the gold reserves of central banks and governments in the 45 countries for which satisfactory figures are available increased about \$200,000,000.

GOLD RESERVES OF CENTRAL BANKS AND GOVERNMENTS

(In millions of dollars)

	1930	1931		Changes		
	Dec. 31	Aug. 31	Oct. 31	8 Months Ending Aug. 31, 1931	September and October, 1931	10 Months Ending Oct. 31, 1931
United States.....	4,225	4,632	3,905	+407	-727	-320
Canada.....	110	89	86	- 21	- 3	- 24
Europe:						
Belgium.....	191	221	357	+ 30	+136	+166
England.....	718	649	660	- 69	+ 11	- 58
France.....	2,100	2,296	2,534	+196	+238	+434
Germany.....	528	325	273	-203	- 52	-255
Italy.....	279	283	293	+ 4	+ 10	+ 14
Netherlands.....	171	260	336	+ 89	+ 76	+165
Spain.....	471	439	434	- 32	- 5	- 37
Switzerland.....	138	229	422	+ 91	+193	+284
U. S. S. R.....	249	280	309	+ 31	+ 29	+ 60
Latin America:						
Argentina.....	412	309	270	-103	- 39	-142
Brazil.....	11	0	0	- 11	0	- 11
Far East:						
Australia.....	75	52	53	- 23	+ 1	- 22
India.....	128	162	162	+ 34	0	+ 34
Japan.....	412	406	342	- 6	- 64	- 70
29 other countries.....	689	651	671*	- 38	+ 20	- 18

* Preliminary figures.

Source: *Federal Reserve Bulletin* for December, 1931.

LEGISLATION

Senate Banking Survey.—Acting under a Senate Resolution (No. 71) passed in May, 1930, which provided for a complete survey of the opera-

tion of the national and Federal reserve banking systems, a subcommittee of the Senate Committee on Banking and Currency, with Senator Carter Glass as Chairman, started its

X. BUSINESS AND FINANCE

work in 1930, and held hearings at intervals in January, February, and March, 1931. The investigation, as contemplated by the resolution, comprehended "the administration of these banking systems with respect to the use of their facilities for trading in and carrying speculative securities; the extent of call loans to brokers by member banks for such purposes; the effect on the systems of the formation of investment and security trusts; the desirability of chain banking; the development of branch banking as a part of the national system, together with any related problems which the committee may think it important to investigate." The report of the subcommittee, including recommendations for legislation, is expected during the session of Congress which convened in December, 1931.

Bank Reserves Committee Report.—The Committee on Bank Reserves of the Federal Reserve System, appointed at the end of 1929 in accordance with a resolution of the conference of governors of the Federal reserve banks Dec. 12, 1929, made its report in November, 1931, for the consideration of the Federal Reserve Board and the governors of the Federal reserve banks, and this report was at that time made public. The report recommends that the legal requirements for member bank reserves be changed to take account of the velocity or rate of turnover of deposits, as well as of their volume, that within specified limits the vault cash held by member banks, as well as the funds which they have on deposit with their Federal reserve bank, be included in their legal reserves, and that for reserve purposes both the classification of deposits into demand and time deposits and also the classification of member banks into central reserve city banks, reserve city banks, and country banks, be abolished. Certain changes are also recommended in the method of deriving from gross deposits the

volume of net deposits subject to reserve, and the inclusion of Government deposits in deposits subject to reserve is recommended. The changes are advocated chiefly on the ground that the proposed requirements will distribute the reserve load more equitably among member banks in proportion to the volume of their business regardless of their location, and that the total volume of reserves will fluctuate with changes in the volume of the nation's business and will support Federal reserve credit policy rather than work against it, as has been the case frequently under the existing provisions. The formula proposed is that each member bank be required to hold a reserve equivalent to (a) 5 per cent of its total net deposits plus (b) 50 per cent of the average daily withdrawals actually made from all of its deposit accounts.

FEDERAL RESERVE SYSTEM MEMBERSHIP

Net Loss.—During the year ended June 30, 1931, 77 banks joined the Federal reserve system and 152 withdrew from membership, including banks that withdrew as a result of conversion or absorption of member by non-member banks. Mergers between member banks, suspensions and liquidations resulted in a net loss of 458 banks, so that total membership in the system showed a decline of 533 for the year, of which 447 were national and 86 state institutions.

Membership Resources.—At the end of June, 1931, 7,782 banks, or approximately 36 per cent of all the banks in the country, belonged to the system and these banks had loans and investments totaling \$33,923,000,000 or over 62 per cent of the loans and investments of all banks, about the same proportion as that of a year previously. The member banks comprised 6,800 national banks with loans and investments of \$20,825,000,000 and 982 state banks with loans and investments of \$13,098,000,000.

BANKS AND TRUST COMPANIES

BANKS AND TRUST COMPANIES

BY GURDEN EDWARDS

SECRETARY, ECONOMIC POLICY COMMISSION, AMERICAN BANKERS ASSOCIATION

NATIONAL BANKS

Aggregate resources of all National banks in the United States dropped between June 30, 1930 and June 30, 1931 from \$29,115,000,000 to \$27,640,000,000 or in the amount of \$1,475,000,000, and their numbers decreased from 7,252 to 6,805, which was a loss of 447. The year before, ended June 30, 1930, the aggregate resources of the National banks had showed an increase of \$1,680,000,000.

RESOURCES AND LIABILITIES OF NATIONAL BANKS IN THE UNITED STATES AND POSSESSIONS JUNE 30, 1931, COMPARED WITH JUNE 30, 1930

(In thousands of dollars)

	June 30, 1930	June 30, 1931
Number of banks.....	7,252	6,805
Resources		
Loans and discounts (including rediscounts).....	\$14,887,752	\$13,177,485
Overdrafts.....	9,452	7,790
Investments.....	6,888,171	7,674,837
Banking house, furniture and fixtures.....	787,750	795,866
Real estate owned other than banking house.....	124,584	125,681
Cash in vault.....	342,507	368,589
Reserve with Federal reserve banks or other reserve agents.....	1,421,676	1,418,096
Other amounts due from banks.....	2,353,669	2,354,145
Exchanges for clearing house and other cash items.....	1,297,487	564,365
Other resources.....	1,003,491	865,844
Total resources.....	\$29,116,539	\$27,642,698
Liabilities		
Capital stock paid in.....	\$ 1,743,974	\$ 1,687,663
Surplus.....	1,591,339	1,493,876
Undivided profits—net.....	545,873	443,592
Reserves for dividends, contingencies, etc.....	94,962	130,599
Reserves for interest, taxes, and other expenses accrued and unpaid	79,129	62,881
National bank circulation.....	652,339	639,304
Due to banks.....	2,679,821	2,746,412
Certified and cashiers' checks and cash letters of credit and travelers' checks outstanding.....	738,327	531,127
Demand deposits.....	10,926,201	10,105,885
Time deposits (including postal savings).....	8,752,571	8,579,590
United States deposits.....	171,964	235,226
Total deposits.....	23,268,884	22,198,240
Bills payable and rediscounts.....	229,033	153,533
Agreements to repurchase securities sold.....	8,173	10,266
Acceptances executed for customers.....	511,007	442,235
Other liabilities.....	391,826	380,509
Total liabilities.....	\$29,116,539	\$27,642,698

Assets and Liabilities.—These data show a decrease of \$1,710,267,000 in loans and discounts and an increase of \$786,666,000 in investments on the asset side. On the liability side there was a decrease of \$56,311,000 in capital, \$97,463,000 in surplus, \$102,281,000 in undivided profits, \$802,316,000 in demand deposits, \$172,981,000 in time deposits and of \$1,070,644,000 in deposit items of all classes combined.

Branch banking increased slightly in the national bank system during the year; Oct. 31, 1930 there were 1,086 branches officially reported, while on Oct. 31, 1931 there were 1,184, an increase of 98.

Trust Banking.—The rapid growth of trust banking in the

X. BUSINESS AND FINANCE

United States among other than trust companies was evidenced by the facts that 2,407 national banks, or 35 per cent of the total number, held authority to exercise trust powers on June 30, 1931 and that 1,856 were exercising these powers through established trust departments, administering 102,987 trust with individual trust assets aggregating \$5,242,000,000, while 782 national banks were acting as trustee for outstanding note and bond issues amounting to \$10,720,000,000. These figures represent an increase in the year of 11,564, or 12.6 per cent in the number of trusts being administered and of \$768,950,000, or 17 per cent in the volume of individual trust assets.

Dividends.—The national banks declared dividends during the year ended June 30, 1931 of \$211,301,000, their gross earnings amounted to \$1,308,764,000, net earnings \$360,740,000 and net additions to profits \$52,541,000.

Bank Technology.—The National Bank Division of the American Bankers Association, the nation-wide voluntary association of this type of bank, contributed important results during the year to the field of bank technology through its continuing committees on investments, research and special departments, and watched the interests of banking and the public in the fields of state and national legislation affecting national banks.

STATE BANKS

Number and Resources.—State commercial banks reported aggregate assets on June 30, 1931 at \$13,110,000,000, as compared with \$15,270,000,000, June 30, 1930, a decrease in a year of \$2,160,000,000, while the total number of these banks fell from 13,582 to 12,259, a loss of 1,323. The year before, ending June 30, 1930, these banks showed a decrease of \$1,555,000,000 in resources.

RESOURCES AND LIABILITIES OF STATE (COMMERCIAL) BANKS JUNE 30, 1931, COMPARED WITH JUNE 30, 1930

(In thousands of dollars)

	June 30, 1930	June 30, 1931
Number of banks.....	13,582	12,259
Resources		
Loans and discounts (including rediscounts).....	\$ 9,216,468	\$ 7,270,126
Overdrafts.....	33,918	32,210
Investments.....	2,947,712	2,937,642
Banking house, furniture and fixtures.....	436,235	401,035
Real estate owned other than banking house.....	145,012	134,412
Cash in vault.....	294,852	274,922
Reserve with Federal reserve banks or other reserve agents.....	848,129	814,368
Other amounts due from banks.....	817,049	790,273
Exchanges for clearing house and other cash items.....	188,341	130,069
Other resources.....	342,186	325,070
Total resources.....	\$15,269,902	\$13,110,127
Liabilities		
Capital stock paid in.....	\$ 1,080,960	\$ 956,206
Surplus.....	746,812	665,752
Undivided profits—net.....	239,420	200,992
Reserves for dividends, contingencies, etc.....	86,802	89,906
Reserves for interest, taxes, and other expenses accrued and unpaid	26,278	25,693
Due to banks.....	647,985	622,526
Certified and cashiers' checks and cash letters of credit and travelers' checks outstanding.....	104,715	70,772
Demand deposits.....	5,636,021	4,581,490
Time deposits (including postal savings).....	5,953,921	5,274,952
United States deposits.....	4,269	86,165
Deposits not classified.....	38,881	5,538
Total deposits.....	12,385,792	10,641,443
Bills payable and rediscounts.....	249,083	180,357
Agreements to repurchase securities sold.....	37,594	17,023
Acceptances executed for customers.....	66,312	54,073
Other liabilities.....	350,849	278,682
Total liabilities.....	\$15,269,902	\$13,110,127

BANKS AND TRUST COMPANIES

Assets and Liabilities.—These data show decreases of \$1,946,342,000 in loans and discounts and of \$10,070,000 in investments. Capital also dropped by \$124,754,000, surplus by \$81,060,000, undivided profits by \$38,428,000, demand deposits by \$1,054,531,000, time deposits by \$678,969,000 and total deposits of all kinds by \$1,744,349,000.

Trust Departments.—As in the case of the national banks, there was a wide growth of savings and trust departmental activities among the state commercial banks. Growth of trust departments in these institutions reflected the strengthening popular demand for complete financial services from a bank, including the handling of business and personal checking deposits, savings funds, investments and post-mortem financial management.

Management and Supervision.—The State Bank Division of the American Bankers Association, the dominant national organization of

commercial state chartered banks comprising a majority of banks of this class, continued active during the year in promoting better bank management practices and methods, better state bank supervision conditions, the organization of city, county and regional clearing-house associations to foster a greater degree of cooperation for the common good among locally competing banks and in a number of other aims for bringing about improved banking both for the welfare of the banks and the public.

TRUST COMPANIES

Number and Resources.—Trust companies on June 30, 1931 numbered 1,469 as compared with 1,564 a year earlier, a loss of 95 units, and they showed a decrease in resources, which stood at \$16,860,000,000 as against \$17,700,000,000, a drop of \$840,000,000. The year before these institutions showed a growth of \$1,550,000,000.

RESOURCES AND LIABILITIES OF LOAN AND TRUST COMPANIES JUNE 30, 1931, COMPARED WITH JUNE 30, 1930

(In thousands of dollars)

	June 30, 1930	June 30, 1931
Number of trust companies.....	1,564	1,469
Resources		
Loans and discounts (including rediscounts).....	\$9,475,936	\$7,860,418
Overdrafts.....	5,585	5,272
Investments.....	3,835,746	4,589,659
Banking house, furniture and fixtures.....	428,889	452,270
Real estate owned other than banking house.....	83,188	96,218
Cash in vault.....	176,126	186,193
Reserve with Federal reserve banks or other reserve agents.....	1,045,843	1,058,734
Other amounts due from banks.....	531,883	615,469
Exchanges for clearing house and other cash items.....	1,392,996	957,102
Other resources.....	726,468	1,039,655
Total resources.....	\$17,702,660	\$16,860,990
Liabilities		
Capital stock paid in.....	\$995,555	\$967,432
Surplus.....	1,684,184	1,620,525
Undivided profits—net.....	200,102	186,896
Reserves for dividends, contingencies, etc.....	69,202	127,904
Reserves for interest, taxes, and other expenses accrued and unpaid	16,141	7,113
Due to banks.....	1,001,867	1,452,777
Certified and cashiers' checks and cash letters of credit and travelers' checks outstanding.....	771,207	480,631
Demand deposits.....	7,363,000	6,493,383
Time deposits (including postal savings).....	4,248,970	4,157,143
United States deposits.....	34,677	122,992
Deposits not classified.....	76,929	13,106
Total deposits.....	13,496,650	12,720,032
Bills payable and rediscounts.....	172,500	109,631
Agreements to repurchase securities sold.....	1,910	285,046
Acceptances executed for customers.....	8,628	442,099
Other liabilities.....	1,057,788	394,312
Total liabilities.....	\$17,702,660	\$16,860,990

X. BUSINESS AND FINANCE

Assets and Liabilities.—These figures show a decrease in loans and discounts of \$1,615,518,000, while investments rose by \$753,913,000. Trust company capital dropped \$28,123,000, surplus \$63,659,000, undivided profits \$13,206,000, demand deposits \$869,617,000, time deposits \$91,827,000 and aggregate deposits \$776,618,000.

SAVINGS BANKS

Stock Savings Banks.—There were 1,254 savings banking institutions June 30, 1931, a decrease of 66. Of these savings institutions 654 were stock savings banks with aggregate resources of \$1,320,000,000 and with capital surplus and undivided profits

of \$103,235,000. These figures represent a loss in numbers of 60 for this class of bank, with a decrease of \$200,000,000 in point of total resources and \$11,085,000 in capital funds as compared with the corresponding date for 1930. These reductions were in line with the trend of recent years in this class of banking institutions, which are suffering under competition from other types of organizations and from commercial banks now conducting savings departments that attract this class of deposits. Deposits declined in the stock savings banks in the year by \$188,835,000; the year before this loss was \$65,090,000.

RESOURCES AND LIABILITIES OF STOCK SAVINGS BANKS JUNE 30, 1931, COMPARED WITH JUNE 30, 1930

(In thousands of dollars)

	June 30, 1930	June 30, 1931
Number of banks.....	714	654
Resources		
Loans and discounts (including rediscounts).....	\$919,318	\$761,320
Overdrafts.....	187	165
Investments.....	378,933	365,912
Banking house, furniture and fixtures.....	41,105	32,753
Real Estate owned other than banking house.....	21,799	21,444
Cash in vault.....	16,018	14,738
Reserve with Federal reserve banks or other reserve agents.....	89,247	75,846
Other amounts due from banks.....	46,925	44,695
Exchanges for clearing house and other cash items.....	3,513	3,095
Other resources.....	4,064	1,433
Total resources.....	\$1,521,109	\$1,321,401
Liabilities		
Capital stock paid in.....	\$60,336	\$51,855
Surplus.....	40,666	39,399
Undivided profits—net.....	13,320	11,980
Reserves for dividends, contingencies, etc.....	2,086	2,413
Reserves for interest, taxes, and other expenses accrued and unpaid	521	457
Due to banks.....	6,308	6,175
Certified and cashiers' checks and cash letters of credit and travelers' checks outstanding.....	640	349
Demand deposits.....	128,304	114,195
Time deposits (including postal savings).....	1,260,852	1,085,008
United States deposits.....	2,812	3,806
Deposits not classified.....	18	566
Total deposits.....	1,398,934	1,210,099
Bills payable and rediscounts.....	4,045	4,223
Other liabilities.....	1,201	975
Total liabilities.....	\$1,521,109	\$1,321,401

Mutual savings banks numbered 600 on June 30, 1931, as compared with 606 a year before, and had aggregate resources of \$11,190,000,000. These figures represented a loss as to numbers of only 6 in the year and an increase in resources of \$895,000,000.

The aggregate surplus was \$968,120,000, an increase of \$69,250,000, and undivided profits stood at \$165,415,000, an increase of \$10,795,000. A rise in total deposits of \$819,445,000 was recorded, this item standing on June 30, 1931, at \$10,035,000,000.

BANKS AND TRUST COMPANIES

RESOURCES AND LIABILITIES OF MUTUAL SAVINGS BANKS JUNE 30, 1931, COMPARED WITH JUNE 30, 1930

(In thousands of dollars)

	June 30, 1930	June 30, 1931
Number of banks.....	606	600
Resources		
Loans and discounts (including rediscounts).....	\$ 5,896,025	\$ 6,051,133
Investments.....	3,872,417	4,475,169
Banking house, furniture and fixtures.....	113,162	123,373
Real estate owned other than banking house.....	44,243	65,432
Cash in vault.....	34,404	38,229
Reserve with reserve agents.....	25,856	33,566
Other amounts due from banks.....	234,713	320,619
Exchanges for clearing house and other cash items.....	1,779	1,852
Other resources.....	72,709	82,415
Total resources.....	\$10,295,308	\$11,191,788
Liabilities		
Surplus.....	\$898,871	\$968,121
Undivided profits—net.....	154,623	165,417
Reserves for dividends, contingencies, etc.....	15,157	7,173
Reserves for interest, taxes, and other expenses accrued and unpaid	638	1,661
Due to banks.....	173	453
Certified and cashiers' checks and cash letters of credit and travel-		
ers' checks outstanding.....	152	36
Demand deposits.....	10,305	3,718
Time deposits.....	9,205,258	10,031,124
Total deposits.....	9,215,888	10,035,331
Bills payable and rediscounts.....	673	4,528
Other liabilities.....	9,458	9,557
Total liabilities.....	\$10,295,308	\$11,191,788

Other Savings Institutions.—While the foregoing data cover the specifically designated savings banking institutions, savings banking activities in the United States are not wholly comprised within such institutions. To find the full facts regarding savings deposits in banks it is necessary to go to the figures for all classes of banks as has been done by the Savings Division, American Bankers Association. The figures compiled by the association show that total savings and time deposits

in banks in the United States on June 30, 1931 aggregated \$28,215,000,000, a decrease of \$270,000,000 in a year as compared with an increase of \$265,000,000 for the corresponding date of a year earlier and constituting the second time in the history of these figures, which runs back twenty years, that a drop was recorded. This reaction was doubtless a reflection of the general depression. The per capita savings shown by the 1931 figure was \$227, as compared with \$232 for 1930.

SAVINGS DEPOSITS IN CLASSIFIED BANKS

(In thousands of dollars)

Year	Mutual Sav- ings Banks	State Banks	Trust Companies	Private Banks	National Banks
1927.....	\$ 8,039,784	\$7,382,147	\$3,530,954	\$49,725	\$7,088,297
1928.....	8,668,090	7,597,977	4,080,324	16,797	8,049,773
1929.....	8,903,557	7,412,561	4,022,735	33,285	7,889,352
1930.....	9,205,580	6,810,033	4,349,057	23,546	8,096,776
1931.....	10,050,866	5,976,093	4,115,826	27,413	8,044,709

TOTAL DEPOSITS AND DEPOSITORS IN ALL BANKS

Year	Total Savings Deposits	Total Number Savings Depositors
1927.....	\$26,090,902,000	48,354,784
1928.....	28,412,961,000	53,188,348
1929.....	28,217,656,000	52,815,903
1930.....	28,484,992,000	52,769,175
1931.....	28,214,907,000	51,399,446

X. BUSINESS AND FINANCE

School Savings.—Another important phase of savings in school savings banking, developed under the leadership of the American Bankers Association's Savings Division on a plan by which education in thrift is carried on along with other work in school hours on a wide scale throughout the country. The following table shows an increase in the last 5 years.

SCHOOL SAVINGS IN THE UNITED STATES

Year	Number of Schools	Number Participating	Deposits	Net Savings
1926-27.....	12,678	3,742,551	\$23,703,436	\$ 9,464,178
1927-28.....	13,835	3,950,237	26,005,138	9,476,391
1928-29.....	14,254	4,222,935	28,672,496	10,539,928
1929-30.....	14,610	4,597,731	29,113,063	7,690,529
1930-31.....	14,628	4,482,340	26,783,610	2,342,888

PRIVATE BANKS

The private banks reporting to the public banking authorities in the United States during 1931 numbered 284 institutions, a drop of 77 units in this class. Their aggregate resources were \$82,145,000 on June 30, 1931, a drop of \$32,460,000 in the year. Total capital funds of private banks were \$13,270,000, a decrease of \$3,915,000. Their total deposits were \$59,600,000, which was \$21,500,000 below the figure for the year previous.

RESOURCES AND LIABILITIES OF ALL REPORTING BANKS JUNE 30, 1931, COMPARED WITH JUNE 30, 1930

(In thousands of dollars)

	June 30, 1930	June 30, 1931
Number of banks.....	24,079	22,071
Resources		
Loans and discounts (including rediscounts).....	\$40,460,670	\$35,164,850
Overdrafts.....	49,438	45,650
Investments.....	17,944,728	20,060,153
Banking house, furniture and fixtures.....	1,810,357	1,808,254
Real estate owned other than banking house.....	425,151	446,488
Cash in vault.....	865,970	884,327
Reserve with Federal reserve banks or other reserve agents.....	3,433,102	3,402,189
Other amounts due from banks.....	3,994,325	4,133,720
Exchanges for clearing house and other cash items.....	2,884,635	1,946,709
Other resources.....	2,151,748	2,316,809
Total resources.....	\$74,020,124	\$70,209,149
Liabilities		
Capital stock paid in.....	\$ 3,889,419	\$ 3,669,998
Surplus.....	4,968,999	4,792,851
Undivided profits—net.....	1,154,804	1,010,128
Reserves for dividends, contingencies, etc.....	268,276	358,102
Reserves for interest, taxes, and other expenses accrued and unpaid	122,737	97,839
National bank circulation.....	652,339	639,304
Due to banks.....	4,337,120	4,828,741
Certified and cashiers' checks and cash letters of credit and travelers' checks outstanding.....	1,615,277	1,083,003
Demand deposits.....	24,098,516	21,326,210
Time deposits (including postal savings).....	29,465,361	29,159,361
United States deposits.....	213,722	448,189
Deposits not classified.....	117,199	19,240
Total deposits.....	59,847,195	56,864,744
Bills payable and rediscounts.....	665,817	457,620
Agreements to repurchase securities sold.....	47,678	312,335
Acceptances executed for customers.....	585,969	938,407
Other liabilities.....	1,816,891	1,067,821
Total liabilities.....	\$74,020,124	\$70,209,149

FOREIGN EXCHANGE

FOREIGN EXCHANGE

By MARCUS NADLER

ASSOCIATE PROFESSOR, NEW YORK UNIVERSITY

THE GOLD STANDARD AND EXCHANGE FLUCTUATIONS

Abandonment.—The year 1931 marks the end of the post-war stabilization of European countries because during that year a number of European currencies went off the gold standard and began to fluctuate. The most notable example of this development was the abandonment of the gold standard by Great Britain on Sept. 21. From a par value of \$4.8665, the pound continued to decline until on Dec. 8, it was quoted in New York at about \$3.26, a decline of 33 per cent. Shortly after the abandonment of the gold standard by Great Britain, similar action was taken by Sweden, Norway, Denmark and Finland, and their currencies have depreciated to about the same extent as the pound sterling.

Gold Export Restrictions.—A number of other countries, although still nominally on the gold standard, must be considered as having in fact

abandoned it. The gold standard assumes a free movement of gold whenever the exchange rates vary above or below the gold points. The moment a country imposes restrictions upon the exportation of gold, however, permitting the exchange to go below the lower gold point, it is in actual practice off the gold standard. Germany, Italy, Austria, Hungary, Yugoslavia, and Czechoslovakia have established such exchange restrictions, thus practically stopping the free movement of gold and of funds so that their currencies may for all practical purposes be regarded as off the gold standard.

Exchange Rates.—The catastrophic developments in the foreign exchange market occurred during the second part of the year. During the first part most of the European exchanges maintained their stability, fluctuating only between the upper and lower gold points, as may be seen from the table below:

MONTHLY AVERAGE OF FOREIGN EXCHANGE RATES, 1931

Countries	Par	Jan.	Mar.	May	July	Sept.	Nov.
Austria.....	14.07	14.07	14.06	14.05	14.04	14.04	13.95
Czechoslovakia.....	2.96	2.96	2.96	2.96	2.96	2.96	2.96
Denmark.....	26.80	26.72	26.75	26.77	26.73	25.26	20.67
Finland.....	2.52	2.52	2.52	2.52	2.52	2.51	1.98
France.....	3.92	3.92	3.91	3.91	3.92	3.93	3.92
Great Britain.....	486.65	485.47	485.83	486.40	485.61	453.13	371.99
Germany.....	23.82	23.77	23.81	23.80	23.28	23.42	23.68
Hungary.....	17.49	17.48	17.44	17.44	17.44	17.45	17.47
Italy.....	5.26	5.24	5.24	5.24	5.23	5.17	5.15
Norway.....	26.80	26.73	26.75	26.78	26.73	25.40	20.52
Poland.....	11.22	11.21	11.19	11.20	11.20	11.20	11.19
Sweden.....	26.80	26.76	26.78	26.81	26.76	26.09	20.74

POLITICAL AND FINANCIAL FACTORS

International Movement of Capital.—While the exchanges began to fluctuate only in the second half of the year, reaching a climax in the collapse of the pound sterling, the foundation for the later depreciation was laid early in the year. Many European countries operate to a large extent with unadjusted balances of payments depending primarily upon the inflow of foreign capital to meet

their international obligations. The intensification of the business depression which set in during the middle of 1929, and above all the wave of pessimism and loss of confidence, stopped almost completely this international movement of capital.

Germany and Austria.—The situation was further aggravated by the disturbing political developments in Europe reaching a peak in the success of the National Socialist party in the German elections of last Septem-

ber and in the proposal for the establishment of a customs union between Germany and Austria. The latter event was soon followed by the collapse of the Austrian Creditanstalt, the largest financial institution in Austria and one of the most important in the Succession States of the old Austro-Hungarian Empire. This event proved a great shock to the lenders of foreign short-term capital who endeavored to recall their foreign balances as fast as possible. The panic of foreign creditors immediately precipitated a financial crisis in Germany and, in spite of the announcement of the Hoover Plan, the German Government was forced to suspend operations of all banks for a number of days and to impose the most severe restrictions on foreign exchange dealings.

Great Britain.—The crisis in Germany had its repercussions in other countries, particularly on London, which in the short-term money market was a debtor abroad, according to the Macmillan report, to the extent of about \$2,000,000,000. The various foreign creditors and particularly the central banks which kept foreign exchange balances in London, endeavored to convert their pound sterling balances either into gold or into dollars. It was officially estimated that foreign short-term funds to the amount of about \$1,000,000,000,000 were withdrawn from the middle of July to Sept. 21. In an endeavor to stem the outflow and restore confidence in the pound sterling the Bank of England contracted credits totaling about \$250,000,000 with the Federal Reserve Banks and the Bank of France while the British Treasury obtained additional foreign credits to an amount of \$400,000,000. Even these huge sums proved inadequate and in July and August the Bank of England lost about \$147,000,000 in gold. Unable to stem the outflow of funds and unable to obtain foreign credits of sufficient magnitude, the Bank of England was forced to abandon the gold standard and from that date on, the pound sterling has gradually declined.

Scandinavia and Finland.—The abandonment of the gold standard by England was a great calamity to a number of other countries, particularly those who were in close financial relationship with London and kept large balances there. Of these the Scandinavian countries were the most important. After a short struggle to remain on the gold standard, the three Scandinavian countries announced on Sept. 28 and 29 their abandonment of the gold standard and on Oct. 12 Finland was forced to do the same.

The Dollar in the Crisis.—All efforts and sacrifices made by countries forced to abandon the gold standard to return to normal currency conditions were without avail, and at the present time most of them find themselves in very much the same position as they were shortly after the war. The confidence crisis, intensified by the collapse of the pound sterling, affected even the dollar. For a few weeks, particularly after Sept. 20, 1931, the foreign exchange rates of some countries such as France, Holland, Belgium and Switzerland rose sharply above the dollar, as may be seen from the following figures:

DAILY QUOTATIONS FOR EXCHANGE CABLE TRANSFERS

	Belgium (belga)	France (franc)	Holland (guilder)	Switzerland (franc)
Par.....	13.90	3.92	40.20	19.30
Sept. 25....	13.92	3.94	40.34	19.53
Sept. 30....	13.91	3.94	40.06	19.58
Oct. 4.....	13.94	3.94	40.13	19.56
Oct. 9.....	13.96	3.94	40.27	19.61
Oct. 15....	14.02	3.94	40.53	19.61
Oct. 20....	14.04	3.94	40.59	19.63
Oct. 26....	13.97	3.94	40.48	19.59
Oct. 31....	13.93	3.93	40.33	19.49

Decrease In U. S. Gold Stock.—Such high points in the foreign exchange levels had not been seen since the war when the United States had an embargo on gold. The sharp withdrawals of funds from abroad becomes clearer if one considers that from Sept. 16 to Oct. 28, the monetary gold stock of the United States decreased by \$728,000,000. The greater part of this gold went to France,

FOREIGN EXCHANGE

although considerable quantities were taken by Switzerland, Holland and Belgium.

THE FAR EAST

Silver Standard Countries.—The movement of the Far Eastern exchanges depends, of course, entirely upon whether their currencies are linked to gold or to silver. Currencies of the countries on the silver standard, notably China, were subject to wide fluctuations, following closely the movement of silver. During 1931 silver reached one of the lowest points in history, and in spite of a temporary upward swing in the latter part of November, the outlook for the silver currencies, unless silver is remonetized, is generally considered unfavorable. Gradually the various countries, such as Persia and Indo-China, are abandoning the silver standard and endeavoring to link up their currencies to gold.

Japan.—On Jan. 11, 1930, Japan abolished the embargo on gold which had been in existence since the outbreak of the war. Since then, however, Japanese exchange has been under considerable pressure and toward the latter part of 1931 its stability could be maintained only through the exportation of large quantities of gold to the United States. In October alone gold exports amounted to about \$67,000,000, and in the middle of November the stock of gold held by the Bank of Japan amounted to only

\$315,000,00 as compared with \$413,00,000 at the beginning of the year.

Australia.—In January, 1931, the Australian pound depreciated from 108 to 130 Australian pounds to the pound sterling and was pegged at the latter rate. The Australian currency is so closely linked to the pound sterling that even after the latter had depreciated to two thirds of its par value, the Australian pound remained at a discount of 30 per cent. in London. However, toward the latter part of November this discount was reduced to 25 per cent. Taking the London exchange rate on Australia and considering the depreciation of the British pound, the value of the Australian pound by the middle of December was approximately \$2.60. The depreciation is also the direct result of the cessation of inflow of foreign capital and the necessity of remitting huge amounts each year for the payment on the external debt service. Thus Australia's monetary stock of gold decreased from \$74,900,000 at the beginning of the year to \$51,000,000 at the end of October.

THE SOUTH AMERICAN EXCHANGE

Fluctuations.—The South American exchanges were also greatly disorganized during the year and, with the exception of the Colombian and Chilean pesos and the Venezuelan bolivar, the exchanges fluctuated widely, as is shown in the table below:

AVERAGE MONTHLY EXCHANGE RATES, 1931

	Par	Jan.	Mar.	May	July	Sept.	Nov.
Argentina.....	96.48	69.70	78.04	70.71	69.88	59.69	58.84
Brazil.....	11.96	9.07	7.89	6.68	7.19	5.91	6.17
Chile.....	12.17	12.07	12.08	12.07	12.08	12.04	12.08
Colombia.....	97.33	96.57	96.57	96.57	96.57	96.57	.....
Peru.....	28.00	29.67	27.86	27.96	27.97	27.92	.....
Uruguay.....	103.42	68.14	73.36	61.43	54.27	41.93	45.00
Venezuela.....	19.30	18.50	18.00	16.43	17.38	17.00	.....

Colombia and Chile.—The stability of the Colombian and Chilean pesos was maintained only by drastic restrictions on dealings in foreign exchange and in Chile by suspension of interest and sinking fund payments on the foreign debt. The foreign exchange restrictions imposed by Colombia also resulted in the default of certain municipalities and in all prob-

ability will result in further defaults by other political subdivisions. The price of maintaining the stability of the exchanges of these countries therefore was obtained only by sacrificing their credit standing abroad, a fact which will close the capital markets of the world to them for a number of years.

Brazil and Peru.—Not only Chile,

but other South American countries, notably Brazil, Bolivia and Peru, were forced to default on their external obligations, partly because of inability to obtain the necessary foreign exchange with which to repay these obligations. The South American exchanges in particular were hard hit by the cessation of the influx of foreign capital. Brazil requires annually about \$200,000,000 in order to pay interest and dividends on foreign capital, immigrant remittances, and other debit balances. To obtain these it relies exclusively on its excess of exports over imports and on imports of foreign capital. Since the excess of exports in the first nine months of 1931 amounted to only about \$70,000,000, the country was forced to export its entire monetary stock of gold, and the value of the milreis declined from 9.07 cents U. S. currency in January to 6.20 cents in December. In 1931 Peru again devalued the sol from 40 cents U. S. currency to 28 cents.

THE OUTLOOK

Stabilization Prerequisites.—The outlook for the stability of foreign exchanges at the time of writing is not very promising. Stabilization of the currencies cannot be effected until the fundamental prerequisites, such as adjusted balances of payments and the restoration of the international capital market, have been met. However, most countries have surrounded themselves with new high tariff walls and those which, because of commercial treaties, cannot increase their tariffs, have established such rigid exchange restrictions as make the free flow of goods almost impossible. Furthermore, the huge short-term foreign debts of the various Continental European countries have induced the governments of the latter to force exports as much as possible and to restrict imports to absolute necessities.

Maldistribution of Gold.—These factors, coupled with the great confidence crisis from which the countries of the world are suffering, make an early return to normal exchange conditions difficult. Furthermore, the

maldistribution of gold which resulted in a situation where the United States and France own approximately 57 per cent of the world's total monetary stock of gold has given further impetus to the idea of abandoning the gold standard completely and establishing so-called managed currencies. As a matter of fact the Swedish Riksbank has already indicated that it is not unfavorably disposed toward the establishment of its currency on other than a gold basis.

The Problem of Sterling.—The main problem, of course, remains the stabilization of the pound sterling. It is reasonable to assume that if London returns to gold, other countries will follow. It is, however, clear that under present circumstances, England will not return to previous parity. The other problem involved is whether the various countries which are still on the gold exchange standard and whose currencies are maintained through rigid foreign exchange restrictions, will be willing to remain on this standard. Most of them have suffered heavy losses from the depreciation of the pound and there seems to be a general feeling that a new standard is necessary.

Trade Handicaps.—In the meantime the wide fluctuation of some of the exchanges and the severe restrictions imposed on dealings in foreign exchange are a great handicap to business throughout the world. They interfere not only with foreign trade, but also with the free flow of funds, and tend to intensify the credit shortage from which a number of countries are suffering.

Pending Problems.—What the year 1932 will bring depends upon the solution of a number of problems which confront the world. Among these may be mentioned reparations, the settlement of Germany's foreign short-term debts and, above all, whether or not the chief creditor countries, the United States and France, will be willing to coöperate with the other countries to the fullest extent in the restoration of the various currencies.

LIFE INSURANCE

LIFE INSURANCE

BY WENDELL M. STRONG

ASSOCIATE ACTUARY, MUTUAL LIFE INSURANCE COMPANY OF NEW YORK

GENERAL

For life insurance, as for the world in general, the history of 1931 has mostly to do with the effects of the depression. Life insurance companies are in a different position from almost any other corporations. They issue contracts to be fulfilled by them many years, perhaps scores of years, in the future, and the essential element to which everything should be sacrificed is that they should attain the nearest approach to absolute safety humanly possible. A time like the present is a test whether such an ideal has been attained. While the test is not yet over, it would seem that with few and unimportant exceptions the companies have approached closely to that ideal.

The effects of the depression with reference to life insurance should be

considered under three categories: first, those which tend to prevent the growth of the business, in which should be classed the great decrease in insurance issued, and a great increase in surrenders, policy loans and lapses; second, those which affect the policyholders, in which should be classed increased mortality through suicide or otherwise, increased disability losses, losses in investment, opportunities for profitable investments, and decrease in expenses through decrease in new insurance; and, third, those which affect the general public interest, in which should be classed lack of normal increase in insurance protection and decrease in new funds available for investment by the companies in mortgages, bonds, and, to a much lesser degree, in stocks.

NEW INSURANCE

(Association of Life Insurance Presidents)

(44 companies having 82% of insurance in force in all U. S. companies)

(Millions)

First Ten Months of Each Year

	1929	1930	Per Cent Increase	1931	Per Cent Increase
Ordinary.....	\$ 7,256	\$ 7,172	-1.2	\$6,150	-14.2
Industrial.....	2,415	2,414	-0.04	2,305	- 4.5
Group.....	939	902	-3.9	666	-26.1
Total Insurance.....	10,610	10,488	-1.2	9,121	-13.0

The year 1930 showed the first decrease for a decade of insurance issued, and this decrease was very slight. The year 1931 shows a considerable decrease, namely, for the total of all kinds of life insurance, about 13%. The latest figures available would seem to indicate that the situation is now improving rather than growing worse. In life insurance, unlike most kinds of business, a decrease in new business does not mean a financial loss to the companies, or to the holders of policies in these companies, but rather that the growth has been retarded and that potential

policyholders have lost the advantage of providing for themselves by insurance. A reference to the following table shows that in ten months this decrease, while only 13% as a percentage, amounted to a billion and one third dollars of insurance for the companies having about 82% of the outstanding insurance of the country. In ordinary insurance the decrease is about the average of 13%, in industrial insurance the decrease is much less, but in group insurance, which would be mainly taken by large employers to cover their employees, the decrease is very much greater.

X. BUSINESS AND FINANCE

AMOUNT OF INSURANCE—ASSETS—INCOME—DISBURSEMENTS

Including Ordinary, Industrial, and Group Business

(Insurance Year Book)
(All U. S. Companies)
(Millions)

Year	Number of Companies	Amount in Force	End of Year: Admitted Assets	Surplus*	Total Income	Total Disbursements	Premiums Received	Total Payments to Policyholders
1930...	352	\$107,948	\$18,880	\$1,825	\$4,594	\$3,199	\$3,524	\$2,247
1929...	353	103,146	17,482	1,767	4,337	2,882	3,350	1,962
1928...	331	95,206	15,961	1,678	4,038	2,543	3,146	1,699
1927...	319	87,022	14,392	1,537	3,873	2,295	2,874	1,500
1926...	322	79,644	12,940	1,364	3,330	2,124	2,624	1,373
1925...	308	71,690	11,538	1,234	3,018	1,936	2,384	1,243

* Includes amount set apart for dividends to policyholders during following year.

INSURANCE IN FORCE AND ASSETS

Year after year for many years there has been a large increase in the amount of insurance in force, amounting to over 50% in the five years 1926-1930. This increase was slowed down considerably in 1930, more by the increase in terminations than by the slight decrease in new insurance issued. It has been much further slowed down in 1931, again much more by the increase in terminations than by the decrease in new insurance written, so that 1931 will show

very little, if any, increase in the total amount in force over 1930.

To a far more limited extent the same tendency will affect the increase in the assets of the companies which increased a total of over 60% from 1925 to 1930. The end of 1931 will show a material increase over 1930 but not quite as great as there has been in each of the preceding five years. This lessening in the rate of increase of assets is due almost entirely to the lapses and surrenders, the decrease in new insurance issued having scarcely any effect upon it.

SURRENDERS AND LOANS

(Companies reporting to the State of New York)
(Millions)

Year	Number of Companies	Amount in Force at End of Year*	Amount of Policies Surrendered*	Amount Paid for Surrendered Policies	Policy Loans at End of Year
1930.....	52	\$73,568	\$1,710	\$517	\$2,337
1929.....	49	69,886	1,370	375	1,992
1928.....	48	64,367	1,134	307	1,663
1927.....	48	58,649	1,072	268	1,484
1926.....	44	53,680	864	236	1,336

* Includes Group Insurance but not Industrial.

INCREASE IN POLICY LOANS

Reference to the table shows that in each year the policy loans have increased materially, the increase in 1929 and 1930 being considerably greater than in any of the previous years. When the figures for 1931 are available the increase will be found to be very much greater than in any previous year. This increase in loans means a great increase in termination within the next year or two for it is the experience of the companies

that when a substantial loan is taken on a policy the chance is very great that the loan will never be paid but eventually the policy will be surrendered in order to liquidate it. Thus we have in the increase in loans a portent for some years to come of heavy terminations.

SURRENDERS AND LAPSES

As would be expected, the increase in surrenders has year after year kept pace with the increase in loans, the

increase in 1930 over 1929 being the greatest in any year, and when the figures are available it is probable that the increase in 1931 over 1930 will be found to be considerably greater. Lapses of policies which have not acquired a surrender value have also been unprecedentedly heavy in 1931.

MORTALITY AND DISABILITY EXPERIENCE

Insurance mortality for several years, while still much below the table, has not been as favorable as in the period of a few years immediately preceding, with the consequence that the savings from mortality have not been as great. The financial situation has contributed somewhat to this through the increase in suicides, but it is only partly explained in this way, the increase having begun before the beginning of the depression. In the experience on benefits in the event of total and permanent disability many of the companies have suffered considerably increased losses, the combined result of mortality and disability experience being smaller contributions from these sources to the funds available for dividends to policyholders.

FINANCIAL

Investment.—The assets of the companies are chiefly invested in three classes of securities,—mortgage loans on real estate, bonds, and policy loans. Of these, policy loans are absolutely secure, being an offset to the company's liability on surrender or maturity.

Bonds.—Investments in bonds depend as to their quality on the quality of the bonds selected. The companies under the investment laws of New York are limited in a way analagous to that of savings banks, although not so strictly, in the bonds which they can purchase. Even more than any legal limitations, however, are the questions of conservatism and judgment as to the bonds selected. While there will be some defaults in the bonds held by the life companies,

it does not seem even with the present pessimistic views on securities that these will, in the well managed companies, affect to any extent the dividends to policyholders. When bonds are not defaulted and are amply secured the companies do not need in their annual reports to use the fluctuating market values but can carry them at the amortized value. This is a proper thing for a life insurance company since its purchase of bonds is not like that of most other financial institutions, a temporary investment, but rather with the purpose of carrying them to maturity so that fluctuating market prices, so long as the interest and the principal will be paid, are of little importance.

Mortgages.—In the mortgage field there will be necessarily more defaults and more foreclosures than in ordinary times, and in the case of large companies having hundreds of millions of dollars in mortgages it cannot be expected that even the most conservative course will avoid the necessity of taking some property. When the original investment has been in accordance with good judgment and conservatism this will probably mean no eventual loss.

Loan and Surrender Demands.—The rise in policy loans and surrenders has a very great bearing on the finances of the companies, and consequently on the finances of the country at large. When the demand for cash under policy loans and surrenders takes a considerable part, or all, of the income of the companies, it means that the funds free for investment are lessened in times of depression, just when usually the best investments are available, and also that the support which normal investment by the companies would give to the financial structure of the country is lessened. In 1931 the demand for loans and surrenders was so great that in some companies it absorbed the whole income leaving nothing to invest, in others it took more than the entire income, and in all, at least a large proportion of the income was so absorbed.

X. BUSINESS AND FINANCE

DIVIDENDS AND INTEREST RATE

(Insurance Year Book)
(All U. S. Companies)

Year	Number of Companies	Dividends Paid (Millions)	Rate of Interest on Mean Invested Funds Earned by 100 Life Insurance Companies (Per Cent)
1930.....	352	\$554	5.31
1929.....	353	513	5.33
1928.....	331	466	5.30
1927.....	319	418	5.32
1926.....	322	376	5.29

DIVIDENDS

In 1930 there were very few changes in dividend scales to policyholders from 1929. In 1931 there were some decreases but most companies held to the scales of 1930. Many companies have already announced their dividend scales for 1932. In these announcements there are practically no increases, many retain the same scales, and many have announced decreases. The surprising thing is not that there have been decreases from the dividend scales which were the peak of all time, but that some companies have felt justified in maintaining scales unchanged, and that in most of the companies where there were decreases they were not very large. In this connection it must be remembered that dividends to policyholders are not like dividends to stockholders of a corporation. They are chiefly refunds from various savings and as such tend to decrease the cost of insurance to the policyholders.

DISABILITY BENEFITS

The year 1931 is a notable one with respect to Disability Benefits. This additional provision in life insurance policies whereby, in case of total and permanent disability, premiums were waived and an income paid to the insured was adopted by many companies between ten and fifteen years ago. Prior to that many of these companies had issued policies providing for waiver of premium in case of total and permanent disability but few had also provided for an income. The experience under this income provision has grown steadily worse so that the statistics of the past did not prove to be a safe guide for the future. Furthermore, the experience of 1930 proved far worse than that of

any previous year. This was probably contributed to by the financial depression, for total disability is not an absolutely definite thing like death, and undoubtedly there have been many claims from those who would not think themselves totally disabled if they had a good job or their business was prosperous.

The total results have been increasing losses to the companies, and the companies came to the conclusion that radical measures must be taken. They divided on what these measures should be. Many companies, including three of the five largest, decided to give up the granting of the provision for income in case of total disability and return to the waiver of premium only, under which their experience had been much more favorable. Many other companies, including the remaining two of the five largest, decided to continue the provision for income in case of total and permanent disability, but reduced the amount of income per \$1,000 of insurance to one half of what it had been before and limited the age before which such disability should occur for the benefits to be operative to 55 instead of 60. Practically all of the companies, whether retaining the waiver of premium only or issuing policies with decreased disability income, adopted a disability table requiring much higher rates of premium for the same benefits than the table which had previously been in use. These changes mostly took effect about the end of the year 1931.

ANNUITIES

An evidence of the confidence which the public has in the life insurance companies is the increase in the demand for various forms of an-

FIRE INSURANCE

nuities that most of the companies have been experiencing during the present year. Another evidence is the increase in the election of optional Modes of Settlement under life policies by which the proceeds will be left with the company, either to be held at interest for the beneficiary, or paid in instalments to the beneficiary.

UNITED STATES FRATERNAL ORDERS

(Insurance Year Book)
(Millions)

Year	Number of Orders	Number of Certificates	New Business	End of Year: Amount in Force	Assets	Total Income	Total Disbursements	Assessments	Claims Paid
1930	255	8	\$1,287	\$8,946	\$882	\$251	\$199	\$199	\$147
1929	269	9	984	9,155	834	253	201	200	154
1928	262	9	1,040	9,324	824	245	182	197	140
1927	235	8	1,025	9,727	760	238	171	193	173
1926	249	9	1,033	9,835	660	224	159	182	121
1925	224	8	1,106	9,770	628	222	160	188	121

FRATERNAL INSURANCE

Fraternal insurance in recent years has not shown the same tendency to increase in amount in force as other kinds of life insurance. The peak was reached in 1926, since which time there has been a gradual decline in amount in force.

INDUSTRIAL INSURANCE

(Insurance Year Book)
(All U. S. Companies)
(Millions)

Year	Number of Companies	Number of Policies	New Business	End of Year: Amount in Force	Premiums Received	Death Losses Paid
1930.....	69	89	\$4,860	\$18,287	\$1,501	\$313
1929.....	68	89	3,738	17,902	1,405	299
1928.....	65	86	4,505	16,686	1,289	259
1927.....	58	82	4,464	15,548	1,137	219
1926.....	49	76	3,954	14,187	1,040	203

FIRE INSURANCE

By EDWARD R. HARDY

SECRETARY-TREASURER, INSURANCE INSTITUTE OF AMERICA

ECONOMIC INFLUENCES

Any consideration of Fire Insurance for the current year which failed to deal with the economic conditions would present an untrue picture. The business of Fire Insurance follows commerce. If there be a decrease in commerce, it is reflected in due time in Fire Insurance. This is not apparent as soon as it is in the price of stocks, for instance, because most policies of Fire Insurance are written for at least a year and many for a period of three to five years, in the case of buildings especially. When these come around for renewal, the lower

prices, due to the economic conditions, call for a decreased amount of Fire Insurance and an automatic reduction in the volume of premiums. This was about 10% in 1930 as compared with 1929 and will be the same, if not a larger percentage, in 1931 as compared with 1930.

PREMIUMS AND LOSSES

The losses in 1929 were \$420,000,000, in 1930, \$463,000,000 and in 1931, barring any undue conflagration, \$450,000,000. This is a slight decrease from 1930, but not such a decrease as the decrease in the amount of pre-

miums. This means that there will be a higher loss ratio for 1931. The most rigid economies are being applied to the expenses and will assist somewhat in keeping the balance on the right side, but those companies which will be able to show an underwriting profit will probably be in the minority. The underwriting profit is what remains after the losses and all expenses of the business are paid from the premiums. If it is necessary to draw on the income from investments to make up the balance, then there is, strictly speaking, no underwriting profit. The Fire Insurance companies, like all others, have substantial investments which represent commercial activities of the country, stocks and bonds in widely distributed properties. In their balance sheets there

will be reflected the reduction in the value of these, but as long as the interest is paid and no large fire necessities the selling of securities to obtain funds to pay losses, the results may not be immediately so serious as in the case of those businesses which have found it necessary to realize on their investments. There has been nothing to indicate any undue moral hazard arising out of the economic conditions. Although in some classes of property commonly known as "preferred" the loss ratios are running high, this cannot be ascribed to an increase in the moral hazard; that is, the record does not show it. Probably most business enterprises are now proceeding cautiously and the Fire Insurance business is doing the same thing.

MARINE INSURANCE

By DOUGLAS F. COX

APPLETON & COX, INC., NEW YORK

PREMIUMS WRITTEN

Total Business.—As usual in this review, attention is called to the fact that the only figures available are those of the previous, not the current year. The figures of business written in 1930 are available but those of 1931 will not be published until the summer of 1932. From the published figures of 1930 it would appear that the total Ocean Marine premium was \$44,036,000, being a decrease of \$4,219,000 as compared with 1929, and that the total Inland Marine premium was \$46,629,000, being an increase of \$785,000 over 1929. At the same time the number of companies writing this class of insurance again increased materially, as shown in the following tabulation:

	Ocean Only	Inland Only	Both	Total
1928.....	6	60	94	160
1929.....	5	72	109	186
1930.....	7	81	123	211

Volume Trend.—Thus we have an increasing number of companies writ-

ing a class of business that is decreasing in volume. It is not necessary to wait for the published figures to state that undoubtedly the premiums for 1931 will prove to be much less than those of 1930, but there is no indication that the number of companies writing the class has decreased; it has probably again increased in 1931.

The loss ratio, shown by the published figures was considerably higher in both divisions; in the Ocean Marine 62.45% against 59.28% for 1929 and in the Inland Marine 49.46% against 41.32% for 1929.

CURRENT BUSINESS FACTORS

The above figures show that the unfavorable factors noted in this review last year, have had their inevitable effect. Those factors were, more companies competing for the business, decreasing volume of premium owing to general depression restricting the shipment of merchandise and increasing number of vessels laid up for

CASUALTY AND MISCELLANEOUS INSURANCE

want of employment. Losses on the other hand do not decrease in the same proportion; consignees of merchandise delivered with the slightest trace of damage will, in times like these, claim the uttermost farthing from their underwriters, whereas in times of prosperity when the merchandise is in demand, many small damages are ignored and the merchandise disposed of to the consumer who has been eagerly awaiting its arrival. In the Inland division, many of the policies cover the property in the hands of the owner and economic pressure too frequently influences the assured to welcome an opportunity to make claim upon his underwriters, or even to create such an opportunity. All of these factors have been present in intensified form during 1931 and it seems inevitable that the underwriting results appearing in the published figures next summer will be still less favorable to the companies.

INLAND MARINE UNDERWRITERS ASSOCIATION

Last year, mention was made of the efforts of the leading companies to establish an organization to stabilize rates and conditions in the principal classes of "floater" policies which form an important part of the Inland Marine business and to prevent those classes from being completely demoralized by the reckless and uninformed competition of the companies which have recently come into the business in increasing numbers. Much satisfactory progress has been made in this direction through the public-spirited and unremitting labors of numerous committees which have given most generously of their time, their knowledge and their experience in the

effort to compose the differences which at times have seemed to constitute insuperable obstacles in the way of the purpose in view. Many of these obstacles have been overcome, agreement between opposing interests having been reached on many points and although there are some very important problems still unsolved, it is hoped that solutions will yet be found and the organization put in a position to function as intended.

NEW YORK STATE INSURANCE DEPARTMENT ACTION

On May 7, 1931 G. S. Van Schaick, Superintendent of Insurance of the State of New York, called a large meeting of insurance executives of three classes of companies, Fire, Marine and Casualty, and addressed them very seriously on the subject of violations of the Rating Laws by Fire and Casualty and encroachments by Marine Companies on the fields of Fire and Casualty. At his suggestion, each class appointed a committee to follow up these subjects under the supervision of the Department and the Marine Committee devoted much time and effort during the summer to the task of solving the long-disputed questions of where the cover under a marine policy should end and the fire and burglary cover begin, by means of an agreement between the three classes. In the autumn joint meetings were held of the Marine committee with the Fire committee and now, in December, with the Casualty committee. Good progress has been made and it is hoped that agreements will be reached which will receive the approval of the Department.

CASUALTY AND MISCELLANEOUS INSURANCE

By A. DUNCAN REID

PRESIDENT, GLOBE INDEMNITY COMPANY

THE ECONOMIC DEPRESSION

Increased Hazards.—In the review of 1931 we find demonstrated

most conclusively the utility and necessity for casualty insurance and fidelity and surety bonds. Not only

have such forms of insurance been fully justified but actually it has been determined that no individual and no business or profession can safely continue without such insurance coverage. The hazards against which casualty insurance, or fidelity and surety bonds, was designated as protection have been greatly enlarged and emphasized by the severe economic conditions which have existed particularly throughout the year 1931. As a result, companies writing these particular forms of insurance have been subjected to severe underwriting loss.

Pressure on Insurance Companies.—At the same time, the difficult days which have recently come upon us all have laid a very heavy hand upon the financial institutions of the country. Insurance companies come within that classification because of the tremendous sums of money which pass into their hands to be held by them in trust for the future payment of insurance obligations. All companies have suffered severely because of these conditions from the shrinkage in valuation of securities which represent the funds so held and which represent also the value behind the financial statements published. As a result, capital and surplus structures, as well as reserves held for future payment of obligations, have been reduced in actual present value to a very startling degree.

Underwriting Factors.—Because of increased claim costs and decreasing security values during the year, we have witnessed a very practical demonstration of the fact that no company can at any time safely shut its eyes to underwriting caution or overlook the necessity for underwriting for profit, and leave as the basis for its prosperity merely the investment return.

Premium Income.—While claim costs have been going up, premium incomes have been coming down. During such times as have existed during 1931, these two factors invariably travel in inverse ratio one to the other. At this time figures show-

ing the premium income for 1931 are not available, but it is definitely assured that such reports when complete will show a very marked falling off in total running into millions of dollars. The causes of the increased cost of claims are an obvious and understandable reflection of the times.

Losses from Bank Failures.—The failure of banks all over the country has brought tremendous loss to those companies whose bonds have guaranteed the safe return of public funds deposited in the defunct institutions. While the companies themselves have lost heavily from this source, the taxpayers have been benefited for the reason that the necessity for an extra tax burden to replace the lost funds has been eliminated.

Losses Under Fidelity Bonds.—Following in the wake of the failure of banks, and as a result of the era of speculation through which we have recently passed, losses under fidelity bonds have been very heavy. Circumstances have moved many long-trusted employes into the zone of temptation. Many men have passed downward in the list as we used it in counting buttons: "Rich man, poor man, beggarman, thief." Against the effect of the last stage in this old list, fidelity bonds have protected. That protection has cost the companies great sums of money.

Theft Losses.—Hold-up and burglary losses have grown in frequency and in total volume by leaps and bounds. Not alone do we now contend with the old-time professional cracksman and crook, but lack of employment and the pinch of poverty have recruited many new members into the ranks. Those companies insuring against these particular hazards have paid the price.

Increased Claims.—All forms of insurance protecting against loss by reason of a public liability have reflected the result of conditions. More claims than usual have been presented, and a marked tendency to exaggerate damage has produced a loss figure out of all proportion to that expected and out of proportion likewise to the premium charge.

COMPENSATION INSURANCE

Increased Payments.—In compensation insurance, which always has been a producer of loss to companies, we find again a heavy increase in payments made. The falling off in payrolls due to the curtailment of employment, and also to reductions in wage scales, has resulted in a lowering of premium income without a compensating reduction in the hazard covered. When the wage reduction has occurred, it is obvious that the payroll will decline, and as the premium is dependent upon the size of payroll, a reduction in premium income must result. It is also obvious that a man working for ninety cents instead of one dollar, as formerly, is equally exposed, because of his hours of employment, to the accident hazard, and the loss, therefore, cannot be expected to decline.

Accident Frequency.—The increasing tendency toward economy on the part of the employers in order that they may balance their operating budget, has produced a speeding-up process in an effort to get more return in labor for the dollar paid. The speeding-up process always has, and always will, produce an increased accident frequency. Scarcity of employment and the uncertainty of the future has made many men conclude that compensation benefits are more adequate and more certain than wages. The incentive to return to work is not present; hence, the upward tendency in loss payments.

Interpretation of Compensation Law.—The more liberal interpretation of the law by industrial boards, whose duty it is to administer the compensation law, is also a serious factor. The tendency to disregard the actual earnings as a basis for compensation award, and the acceptance of a normal earning as a basis, produces a condition resulting in the payment to satisfy the compensation laws and in addition thereto, an added amount because of industrial depression.

Adequacy of Premium Rates.—This year has brought home more

forcefully than ever the necessity for the consideration of the cycle of experience, as distinguished from a mere consideration of an in and out computation. It has made more emphatic the fact that the premium rates charged for many lines, particularly the automobile liability and compensation lines, are wholly inadequate. Out of it all we should gain a more sane and healthy underwriting practice and a more conservative and expertly-managed financial program. For this lesson, many companies have paid millions of dollars out of their assets.

COMPANY COMPETITION METHODS

Stability Factors.—There is a very definite reduction of high-pressure competitive methods as between companies. The tendency to pay excess commissions and allowances to agents for production has slackened. The quotation of cut rates for the purpose of acquiring volume, regardless of possible profit, is materially less in evidence. Economy in field operation is the order of the day. The very serious consideration of acquisition and field supervision costs is being undertaken. All of which will contribute much to the stability of the business from a production standpoint.

Safety work in industrial plants has been stimulated and made more effective. Plans for the safety of the public on the highways have been received and supported most enthusiastically by insurance companies and agents and the public. Five states have been added during the year to the list of those putting into effect financial responsibility laws governing automobile drivers. One additional state has passed such a law which will become effective on Jan. 1. These laws should have, as they mature in practice, a very excellent effect upon the record for highway fatalities.

Credit Extension.—The extension of credit for long and unnecessary periods by companies to agents, and

by agents to customers, has been receiving very careful attention, and the conditions surrounding this feature of insurance operation show marked improvement.

Rates.—Pleas made to state supervising officials having to do with the rates have been favorably answered. Emergencies existing with particular reference to compensation rates have been officially recognized and in many states, put into effect.

CONCLUSION

Adversity is a great teacher, but her lessons are hard and painful, as the whole insurance industry has discovered. The lessons learned in 1931, however, will contribute much to insurance-company financial stability for the future and set in motion business-like and sane procedure which will insure a greater and more practical service efficiency from which the public will greatly benefit.

CHRONOLOGY OF FINANCIAL EVENTS, 1931

(From *The New York Times*, December 31, 1931)

JANUARY

- Jan. 2.—Stock market begins year with advance of $3\frac{1}{4}$ per cent, railway shares leading. Call money $1\frac{1}{2}$ per cent, lowest since September. Rise of \$6,000,000 in brokers' loans for the week, first weekly increase since the middle of September. French bank rate reduced from $2\frac{1}{2}$ per cent to 2 per cent, lowest in half a century.
- Jan. 5.—Silver declines in London to $14\frac{1}{8}$ d against $14\frac{1}{2}$, Jan. 2; new price below any reached in 1930.
- Jan. 7.—Steel rate of output 41 per cent, against 25 per cent at the end of December.
- Jan. 9.—Silver $13\frac{3}{16}$ d, lowest of the month.
- Jan. 12.—Silver recovers to $13\frac{5}{16}$ d. Spot cotton falls to 10c per pound, lowest since February, 1912, except for war panic of 1914.
- Jan. 14.—Steel output 44@45 per cent. Trading in stocks 1,276,000 shares, lowest since September. Time money $1\frac{1}{4}$ per cent, lowest in thirty-five years. Silver declines $13/16$ d.
- Jan. 15.—Brokers' loans lowest since December, 1924.
- Jan. 16.—Exchange on London falls to gold import point.
- Jan. 20.—President of United States Steel declares that the worst of the deflation was passed thirty days ago. Bank of England loses \$3,650,000 more gold to France.

- Jan. 21.—Cheerful sentiment grows. Steel output 46 per cent.
- Jan. 27.—United States Steel Corporation reports smallest earnings for the December quarter since the first quarter of 1922, with December earnings the lowest of any month since February, 1915.
- Jan. 28.—United States Government bonds break $\frac{3}{8}$ @ $\frac{1}{2}$ point on Secretary Mellon's description to the Senate committee of the disastrous effects which would follow the proposed capitalization of veterans' compensation into a \$3,400,000,000 loan. Stocks lower, steel output 47 per cent.
- Jan. 29.—United States bonds fall $\frac{1}{2}$ @1 point further. Sharp recovery in stocks. Corn $61\frac{3}{4}$, decline of $11\frac{1}{2}$ cents from high point of January.
- Jan. 30.—Gold exports from London to Paris and United States Mint estimate United States gold output in 1930 as \$500,000 greater than year before; silver production decreased 12,600,000 ounces to smallest annual production since 1888.
- Jan. 31.—Bids for Treasury's \$60,000,000 ninety-day bills offered for discount equivalent to $\frac{7}{8}$ @1 per cent.

FEBRUARY

- Feb. 3.—Silver at London falls $7/16$ d. to $12\frac{13}{16}$; China selling.

CHRONOLOGY OF FINANCIAL EVENTS, 1931

Feb. 4.—U. S. Bonds recover sharply, sterling rises. Steel output 48 per cent of capacity. Figures of January iron production lowest since 1921. Silver down $\frac{3}{8}$ to 12 7/16. Copper 9 $\frac{1}{2}$ c, against 10 $\frac{1}{2}$ Jan. 2.

Feb. 8.—Silver at London 12d., lowest price reached in 1931 and representing fall of 50 per cent since Sept., 1929. Very active stock market, averages up 3 $\frac{1}{2}$ points. Copper advanced $\frac{1}{4}$ c to 9 $\frac{3}{4}$.

Feb. 10.—Silver 12 5/16; wheat, corn and cotton up; stocks advanced 3 $\frac{1}{4}$ points on average, largest day since November.

Feb. 11.—Stock market average rises 3 $\frac{1}{8}$ points, but loses gain; copper advances $\frac{1}{2}$ c further to 10c. Silver bullion up 7/16d to 12 $\frac{3}{4}$. Steel output 50 per cent of capacity.

Feb. 13.—Stocks decline, corn weaker, silver falls 5/16 to 12 $\frac{1}{8}$ d. Sterling declines on Snowden's gloomy speech about British finances.

Feb. 16.—Stocks advance, specialities bid up violently.

Feb. 17.—Stocks decline on average 2 $\frac{1}{2}$ points, some declines ranging 4 to 20 points.

Feb. 19.—Stock average rises 2 $\frac{1}{2}$ points.

Feb. 20.—Stocks up 2 $\frac{3}{8}$ points. New York City offers \$100,000,000 loan at 4 per cent, mostly for fifty years; largest issue on record, except \$100,000,000 one to three year loan of 1914.

Feb. 24.—First 5,000,000-share day on Stock Exchange since Oct. 10; stocks strong. Silver up $\frac{1}{4}$ d to 12 11/16. Cotton rises $\frac{3}{8}$ cent to 11.35 cents per pound; advance of 13 $\frac{1}{2}$ per cent since Jan. 12.

Feb. 26.—Stocks advance, then decline. Wheat breaks 2 cents on Farm Board's announcement of purpose to sell 35,000,000 bushels abroad.

pecially foreign securities, silver bullion 13 5/16d.

March 11.—Stock market weak. Steel output higher at 55 per cent. N. Y. Central reduces annual dividend rate to 6 per cent from 8 per cent, paid since 1927.

March 15.—Silver 14 $\frac{1}{2}$ d, equalling previous high point for the year and comparing with 12d on Feb. 9. Treasury offers \$500,000,000 twelve-year 3 $\frac{3}{8}$ per cent bonds; applications \$2,111,871,000. Also places \$300,000,000 six-months 1 $\frac{1}{2}$ per cent certificates and \$600,000,000 one-year 2 per cent certificates.

March 17.—Bank of England obtains £2,300,000 Transvaal gold; first occasion since May, 1930, on which bank has obtained gold offered in London open market.

March 18.—Steel output rises to 57 per cent, the highest of the year. Stocks strong.

March 20.—Call money on Stock Exchange 1 per cent, first time since June, 1915. Silver 13 13/16d.

March 21.—Silver 13 9/16d.

March 23.—Farm Board announced that it would make no effort to stabilize prices for 1931 wheat crop. July wheat (unpegged delivery) declined 2 $\frac{1}{4}$ @2 $\frac{3}{4}$ c.

March 25.—Baltimore & Ohio annual dividend rate reduced from 7 per cent to 5 per cent. Westinghouse Electric dividend from 10 per cent to 8 per cent. Silver declined 5/16 to 13 $\frac{1}{2}$ d. July and September wheat advanced $\frac{3}{4}$ @1 $\frac{1}{8}$ c. Winnipeg prices up 1c. Steel output unchanged at 57 per cent.

March 26.—Anaconda Copper reduced annual dividend from \$2.50 to \$1.50. Lackawanna dividend cut from 12 per cent to 8 per cent. Australian bonds break on threat of New South Wales Premier to repudiate interest due to London.

MARCH

APRIL

March 4.—Steel production 53 per cent. N. Y. City 50-year loan for \$100,000,000 at 4 $\frac{1}{4}$ per cent placed at premium of 1.977, said to be the largest premium on record for a long-term city loan.

March 6.—Bond market stronger, es-

April 1.—Stocks weak. Steel output 55 per cent of capacity; against 57 in previous week; first decline of any week in 1931.

April 4.—Wheat rises 3c.

April 8.—Steel output down from 55 per cent to 53.

X. BUSINESS AND FINANCE

- April 9.—Bank of France reports loss of \$780,000 gold for week, first decrease since April, 1930, the increase during the interval having been \$540,000,000.
- April 14.—Revolution in Spain, peseta exchange declines $3\frac{3}{4}$ per cent. Bank of England gets \$5,600,000 Transvaal gold.
- April 15.—Steel output 51 per cent, third successive weekly decline. Spanish peseta recovers $5\frac{1}{2}$ per cent.
- April 16.—Peseta declines $3\frac{3}{4}$ per cent.
- April 18.—Wheat rises 1@2c to 69c per bushel for December delivery; $8\frac{7}{8}$ c above the year's lowest of April 2.
- April 20.—Paris sends \$3,500,000 gold to New York, first shipment from that quarter since February, 1927.
- April 21.—Stocks very weak.
- April 22.—Steel output 49% of capacity, against 51 in preceding week.
- April 24.—Stocks firmer. Failure of Pynchon & Co. announced, seventh New York Stock Exchange failure since the panic.
- April 27.—West & Co., small Stock Exchange house, suspends payments. Sterling at highest rate thus far in 1931. Snowden in budget speech announces intended recall by British Treasury of \$100,000,000 from New York credit established 1925.
- April 28.—United States Steel report for the quarter shows smallest earnings since the September quarter of 1921, and deficit after dividends of \$14,763,000, against \$9,144,000 in the December quarter. Dividend unchanged.
- April 30.—Sharp recovery in stocks, averages $4\frac{5}{8}\%$ higher. Bethlehem Steel dividend reduced from 6 to 4%.
- MAY**
- May 4.—Rise in wheat and corn price, making 5c advance from previous week's lowest. Copper sells at 9@9 $\frac{1}{4}$ c, lowest price in 35 years.
- May 6.—Steel output 47 per cent.
- May 7.—Reserve bank rate reduced from 2 to $1\frac{1}{2}$ per cent, lowest official bank rate on record in any country.
- May 9.—Active stocks decline 8@10 points.
- May 11.—Run on the Kreditanstalt, largest private bank in Austria and a Rothschild enterprise. Possibility of failure threatened. Great uneasiness throughout Europe because Kreditanstalt held more than \$100,000,000 in foreign short-term credits. Austrian Government comes to relief of bank, proposing to raise \$23,000,000 necessary to meet its obligations.
- May 12.—New York City \$52,000,000 corporate four-year stock subscribed on a 3 per cent basis.
- May 14.—Bank of England rate reduced from 3 to $2\frac{1}{2}$ per cent.
- May 18.—Break in stocks, some declines of 7@8 points. United States Steel common below par, first time since June, 1924. Railway shares down 5@6 points.
- May 20.—Steel output 45 per cent.
- May 22.—Farrell and Schwab give predictions of trade at Iron and Steel Institute. Schwab hopeful, Farrell indignant over price-cutting.
- May 27.—Stocks weak. Commerce Commission refuses "at this time to initiate a general investigation into the railway situation on our own motion." Steel output 44 per cent.
- JUNE**
- June 2.—Grave crisis develops in German affairs, due to withdrawal of foreign capital and outpour of gold. Fall in German bonds.
- June 3.—Cotton lower. Stocks recover. Steel output 42 per cent.
- June 4.—Advances of 4 to 8 points in stocks, bonds firm. Cotton, wheat and corn recover.
- June 5.—Recovery in stocks continues. Treasury's offer of \$800,000,000 in eighteen-year $3\frac{1}{2}$ per cent for the quarterly financing oversubscribed by applications of \$6,000,000,000.
- June 8.—Decline in German bonds; Republic's $5\frac{1}{2}$ per cents 63, against 84 earlier in the year and issue price of 90 in 1930.
- June 9.—Chicago banks in trouble,

CHRONOLOGY OF FINANCIAL EVENTS, 1931

some saved by merger. Withdrawal of foreign short-term credits from Berlin grows suddenly large; Reichsbank reports loss for the week of \$21,400,000 gold and \$17,400,000 foreign exchange.

June 10.—Stocks firmer. New York Central leaves 6 per cent dividend rate unchanged. Steel output 40 per cent.

June 11.—Railways agree on petition to Commerce Commission for 15 per cent advance in rates. Southern Railway dividend rate reduced from 8 per cent to 4. German bonds lower.

June 15.—German bonds steadier. Reichsbank rate advanced from 5 per cent to 7 per cent. Reichsbank reports loss of \$127,000,000 gold for the week.

June 20.—Hoover proposes year's suspension of payment on inter-governmental war debts and German reparations. Rapid rise in stocks, bonds strong. German $5\frac{1}{2}$ s rise 3 points to 68 $\frac{3}{4}$.

June 22.—Stock market rises rapidly. German bonds strong.

June 24.—Pennsylvania Railroad cuts dividends from 8 per cent to 6. Stocks nevertheless recover, including Pennsylvania shares. Steel output 36 per cent.

June 25.—Reichsbank reports \$84,000,000 loss of gold for week, making outgo \$232,000,000 in three weeks.

JULY

July 1.—International negotiations at Paris regarding German situation beginning. Stocks strong. Steel output 35 per cent.

July 7.—London calls conference on German affairs. German industry guarantees \$119,000,000 for relief of situation. Stocks sell off, German bonds reactionary.

July 8.—German bonds irregular; steel output 33 per cent.

July 9.—President Luther of Reichsbank flies by airplane to London, thence to Paris, to apply for help in German emergency; believed to seek loan of \$360,000,000 from British, French and American central banks. Reichsbank statement

shows gain of \$72,000,000 gold; proceeds of foreign credit advanced by other central banks, but losses \$12,000,000 for day.

July 11.—Reichsbank makes urgent appeal for further help by other countries.

July 12.—German $5\frac{1}{2}$ s, 69%, comparing with 84 earlier in year, and 63 at low point of June.

July 13.—Berlin situation takes grave turn. Darmstädter Bank fails. Run on Reichsbank. Mark exchange declines 2 $\frac{5}{8}$ c to 21c, making depreciation nearly 12 per cent. Heads of European central banks confer at Basle. German Republic $5\frac{1}{2}$ s decline to 62 $\frac{5}{8}$.

July 14.—Two-day special bank holiday proclaimed in Berlin. Central bank credit of \$100,000,000 to Reichsbank, due to expire, extended for three months. German $5\frac{1}{2}$ s fall to 59.

July 15.—Stocks decline, many losing 3 to 7 points. German mark falls to 20c. Reichsbank rate raised from 7 per cent to 10; minimum reserve of 30 per cent on Reichsbank notes authorized by government, instead of 40. Reichsbank reports \$13,000,000 loss of gold for week, \$60,000,000 loss of foreign exchange. Reserve ratio 35 $\frac{3}{8}$ per cent. Mark exchange 20c, lowest of year. Bank of England loses gold heavily, sterling goes to \$4.83. Steel output 32 per cent.

July 16.—Bank of England loses \$7,200,000 gold. Markets rise 3 to 6 points on better feeling regarding Germany. Mark recovers. German $5\frac{1}{2}$ s up 3 points to 64.

July 18.—German $5\frac{1}{2}$ s recover to 67. Bruening, Curtius, Mellon and Laval confer at Paris.

July 20.—Stimson confers with MacDonald at London. Mark exchange recovers to 23 $\frac{5}{8}$ c.

July 22.—Stocks decline, very dull business. Steel output 30 per cent.

July 23.—German $5\frac{1}{2}$ s fall to 58. Bank of England reports \$20,000,000 loss of gold for week; bank rate raised from 2 $\frac{1}{2}$ per cent to 3 $\frac{1}{2}$.

July 24.—Heavy gold withdrawals from Bank of England. German

- 5½s decline to 55. Reichsbank loses \$3,000,000 gold for week, gains \$8,000,000 foreign exchange.
- July 27.—Transactions on Stock Exchange 575,000 shares, smallest of any five-hour day since 1924. Stimson confers with Hindenburg.
- July 28.—U. S. Steel dividend rate cut from 7 per cent to 4. Very unfavorable quarterly statement; \$7,617,000 deficit after dividends.
- July 29.—Break in stocks. German 5½s, 58. Steel output recovers to 32 per cent.
- July 30.—Bank of England reports loss of \$80,000,000 gold for week, reserve ratio down from 49% per cent to 32%; bank rate raised from 3½ per cent to 4½.
- July 31.—Reichsbank gains gold for week, but discount rate is raised from 10 per cent to 15.

AUGUST

- Aug. 1.—Overnight announcement of \$250,000,000 credit granted to Bank of England by Federal Reserve and Bank of France. British treasury authorizes £15,000,000 increase in fiduciary circulation by Bank of England.
- Aug. 3.—Reichsbank gains \$2,000,000 gold, \$20,000,000 foreign exchange. Reserve ratio 36%. Mark holds in exchange market.
- Aug. 5.—United States Steel announces cut of 10 to 15% in official salaries. Steel output 30%.
- Aug. 6.—Slow decline in stocks continues. Federal Reserve reports \$68,000,000 increase in circulation for the week. Reserve officials ascribe unseasonable increase to hoarding of currency.
- Aug. 10.—Cotton breaks \$7 per bale on government's high crop estimate.
- Aug. 11.—Recovery in stocks. Reichsbank rate reduced from 16% to 10%.
- Aug. 12.—Foreign bonds recover, with advances of 1 to 12 points. Steel output 32%.
- Aug. 13.—Bank of England reports only slight decrease in reserve for week, reserve ratio 43%. Farm Board suggests cotton growers destroy one-third of growing crop.

- Cotton's price rises, but trade ridicules the proposal.
- Aug. 17.—Many bank suspensions throughout the United States. Stocks and bonds lower. German 5½s, 61%.
- Aug. 18.—International committee of bankers, named by London conference of July to report recommendations on the German situation publishes its findings after meeting at Basle. Report provides for extension of remaining foreign credits in Germany for six months.
- Aug. 19.—Break in home and foreign bonds; reports of heavy selling both by investment trusts, fiduciary institutions and by home banks which were apprehensive of a run. South American issues fall sharply. Steel output 32%.
- Aug. 20.—Bank of England gains \$7,600,000 gold for week, making net loss \$157,000,000 in three weeks.
- Aug. 21.—German bonds break, 5½s 59¼. Other foreign bonds weak. Great demoralization in home railway bonds.
- Aug. 22.—Farm Board barter 25,000,000 bushels of its wheat holdings with Brazil for coffee of equivalent value. London Labor Ministry hopelessly split on financial relief measures.
- Aug. 24.—Labor Government resigns, three-party Cabinet formed with MacDonald at its head. Reports that additional large short-term foreign loan will be sought by Bank of England. Franco-American banking credit of \$250,000,000 to support sterling nearly exhausted.
- Aug. 25.—Stocks quiet, sterling holds steady. Reichsbank's reserve ratio rises from 35% per cent to 41½. German 5½s sell at 58½. Break in railway bonds.
- Aug. 26.—Steel output 31 per cent.
- Aug. 27.—Bond market recovers irregularly. Federal Reserve reports week's increase in circulation \$43,600,000, making \$209,000,000 since end of July, against increase of only \$2,000,000 in same period of 1930. Bank of England reports slight increase of gold.
- Aug. 28.—One-year credit of \$400,000,000 extended by French and

CHRONOLOGY OF FINANCIAL EVENTS, 1931

American bankers to British treasury. French subscription divided between banks and the general public, offer to public being in the form of one-year British Treasury notes.

SEPTEMBER

- Sept. 1.—Stock Exchange business smallest since Oct. 24.
- Sept. 2.—Stocks weaker. Cotton 6½ cents, new low price for year to date. Reichsbank reports \$10,000,000 gain in holdings of foreign exchange, discount rate reduced from 10 per cent to 8. Steel activity 31 per cent of capacity.
- Sept. 3.—Break in railway stocks. Berlin Stock Exchange reopens after seven weeks' closing; prices 20 to 30 per cent lower than on day before close.
- Sept. 4.—South American bonds break sharply.
- Sept. 8.—Stocks weak. Agricultural Department gives out the largest September estimate on probable cotton yield published since the war.
- Sept. 9.—New York Central cuts dividend rate 6 per cent to 4. Rate of steel production 30 per cent.
- Sept. 10.—Rock Island passes common stock dividend. Federal Reserve reports \$52,000,000 increase in note circulation for week, making \$293,000,000 increase since the middle of July. Movement again ascribed to hoarding.
- Sept. 11.—Treasury announces subscriptions of \$940,599,000 to quarterly offering of \$800,000,000 in 3 per cent twenty-four-year bonds; lowest rate since pre-war days; subscriptions to \$300,000,000 of 1½ per cent one-year certificates, \$1,251,000,000. Foreign bonds weak; new United States 3 per cents "when issued" go below par.
- Sept. 12.—Stocks and bonds lower. Cotton goes to year's lowest. Week's gold imports at New York \$10,600,000.
- Sept. 15.—Stocks and bonds lower. Argentina arranges to meet \$20,000,000 New York maturity, partly through refunding. Controller of Currency relaxes requirements re-

- garding valuation of bonds held by national banks solely according to Stock Exchange prices. New York City's \$40,000,000 loan placed on 3¼ per cent basis.
- Sept. 16.—Westinghouse Electric cuts dividend, Kansas City Southern passes dividend. Steel output unchanged at 30 per cent.
- Sept. 17.—Moderate recovery in stocks; bonds unsettled. United States foreign trade statement for August shows first import surplus of the year.
- Sept. 18.—Decline in stocks, some falling 4 to 9 points. Bonds weak, United Kingdom 5½s declined from 104½ to 101. German bonds very weak. Rumors of coming trouble in Europe.
- Sept. 19.—Bond market greatly unsettled, United Kingdom 5½s down to 98½. Sterling declines 1 cent to \$4.84½. Bank of England's loss of gold to Amsterdam during the week nearly \$20,000,000.
- Sept. 21.—British Government announces suspension of free gold payments. London Stock Exchange closed for the day. Great anxiety regarding New York stock market, but prices hold steady, with heavy covering of bear account. Sterling falls from \$4.84½ to \$3.70, closing at \$4.19. Silver bullion rises from 12 15/16d to 14%. Heavy break in foreign bonds.
- Sept. 22.—Stock market quiet; some recovery in foreign bonds. Sterling recovers to \$4.24. Silver advances to 15%^d.
- Sept. 23.—Sharp recovery in stocks at New York, with 10 to 15 point rise in many railway shares. London stock market reopens with recovery. Foreign bonds at New York recover 5 to 10 points; domestic, 1 to 10 points. United States Steel Corporation announces 10 per cent wage reduction; other large companies follow. Sterling declines to \$4.10. Silver, 16¼^d. Steel output, 29 per cent, lowest of the year.
- Sept. 24.—Stocks fall 3 to 15 points, foreign bonds weak. Sterling declines to \$3.49; silver, 15%^d.
- Sept. 26.—Sterling recovers to \$3.82, silver 16%^d. Week's U. S. gold ex-

ports \$3,600,000, imports \$20,000,000. Very heavy earmarkings of gold for European account, reaching \$182,500,000 for the week.

Sept. 28.—Norway and Sweden suspend gold payments. Scandinavian exchange falls 19 per cent below gold parity. Foreign bonds decline heavily, but decline in stocks is not large. Sterling recovers to \$3.90, silver unchanged.

Sept. 29.—Denmark suspends gold payments. Stock market confused and lower; contradictory movement in foreign bonds. Sterling firm, silver unchanged.

Sept. 30.—Stocks weak, movement of foreign bonds much confused. Steel output rises from 29 per cent to 31.

OCTOBER

Oct. 1.—Trunk line railroads announce agreement on Four Party consolidation. Stocks lower, bonds recover, foreign bonds very strong. Sterling recovers to \$3.99½, silver 15 15/16d. Very heavy gold withdrawals from Federal Reserve.

Oct. 2.—Recovery in stocks, especially railroads. Foreign bonds higher. Sterling \$3.88, silver 15 15/16. Sharp recovery in Scandinavian exchange.

Oct. 3.—Stocks weak, especially railroads. Foreign bonds recover further, domestic issues irregular. Sterling down to \$3.84, silver 16½. Week's United States gold exports \$71,000,000, all to Europe; earmarked gold increased \$11,600,000, gold imports \$14,000,000.

Oct. 5.—Stocks weak and unsettled. Price of wheat, corn, oats and cotton touch lowest prices of 1931; also average price of stocks.

Oct. 6.—Stocks rise violently on intimation of action by the President on the home financial situation; some advances of 9 to 16 points. Day's sales 4,300,000, second largest since June. Bond market irregular, but with many recoveries; wheat and corn rise 2 cents. Sterling \$3.93, silver 16½d.

Oct. 7.—President Hoover's plan of \$500,000,000 corporation to conserve assets of hard-pressed banks announced.

Oct. 8.—New York Reserve Bank rate advanced to 2½ per cent, against 1½ fixed in May. Stocks advance rapidly, many gaining 6 to 7 points; some improvement in bonds, sterling stronger, silver 17 5/16d. Cotton estimate raised to 16,284,000 bales, exceeding any harvest, except 1926.

Oct. 9.—Sharp rise in railway stocks and bonds, on reports of government measures to relieve the railway situation.

Oct. 10.—Stocks little changed, bonds lower. United States bonds fall sharply. Sterling \$3.90½, silver 17 7/16d. Week's gold exports \$99,000,000; imports \$13,000,000, earmarkings \$73,400,000.

Oct. 13.—Stocks and bonds weaker, more than half of outstanding United States bond issues sell below par. Large gold exports continue. Sharp rise in cotton. Sterling \$3.90, silver 17¼d.

Oct. 14.—Gold exports \$42,000,000 in the day. No earmarkings. German 5½s fall to 31, year's low price, against 84 earlier in year. Steel output 29 per cent.

Oct. 15.—New York bank rate advanced from 2½ per cent to 3½. Sterling \$3.88, silver 17d. Stocks rise, then react; bonds higher. Reserve bank's weekly statement shows \$200,000,000 decrease for week in gold reserve, making \$649,000,000 decrease since Sept. 16, caused by earmarkings and gold exports. Note circulation increased \$51,000,000, making increase of \$605,000,000 since the middle of July, as against reduction of \$10,000,000 in the same period of 1930. Reserve ratio 61½ per cent, against 78½ on Sept. 16.

Oct. 16.—Stocks higher, bonds steadier. Existing German Government wins vote of confidence by twenty-four majority in Reichstag over Hitler opposition.

Oct. 17.—German bonds advance, 5½s to 37, largely on news that German export surplus during September broke all records at 387,000,000 marks, or \$91,700,000. Sterling \$3.88½, silver 17 9/16d. Week's gold

CHRONOLOGY OF FINANCIAL EVENTS, 1931

- exports \$133,700,000, imports \$8,800,000, earmarkings \$28,111,000.
- Oct. 19.—Wheat rises $2\frac{1}{2}$ cents per bushel, corn $1\frac{1}{8}$ cents, cotton $\frac{1}{4}$ cent per pound. Stocks steady, bonds firmer, with general strength in foreign securities. Sterling $\$3.91\frac{1}{2}$, silver $17\frac{5}{8}$ d. New United States 3 per cents fall to 89.16.
- Oct. 20.—Commerce Commission denies railway petition for 15 per cent rise in freight rates, but proposes to substitute allowance of graded advance on certain classes of commodities, expected to produce \$100,000,000 to \$125,000,000 additional revenue, cash proceeds from the increase to be allotted by the stronger roads to railways which were not earning charges.
- Oct. 21.—Reaction in railway stocks and bonds, partly on fear that railways will reject Commerce Commission's rate plan. Foreign banks take \$30,000,000 gold for export, earmarkings \$8,600,000. Steel output 28 per cent.
- Oct. 22.—Stocks lower, domestic bonds weak. Day's gold export small. Federal Reserve reports week's loss of gold \$71,800,000, circulation increased \$61,500,000, reserve ratio down to 59.9. Wheat nearly 1 cent lower.
- Oct. 23.—Stock market recovers, strength in home and foreign bonds. Wheat rises $2\frac{3}{4}$ cents.
- Oct. 24.—Further recovery in stocks, bonds and agricultural products. German $5\frac{1}{2}$ s rise to $40\frac{1}{4}$; Argentine bonds very strong. Stock averages 24 per cent above lowest figure of month and year, wheat prices 25 per cent above year's lowest.
- Oct. 26.—As a result of visit of French Premier Laval to White House President Hoover and M. Laval announce purport of conference, committing both governments to preservation of the gold standard, consideration of need for an international debt moratorium and promotion of financial stability. Stocks decline 2 to 4 pounds. German Republic $5\frac{1}{2}$ s decline $5\frac{1}{4}$ points to $35\frac{1}{4}$, Argentine bonds strong. Wheat and cotton lower.
- Day's gold engagements for export \$20,000,000, France taking \$18,000,000.
- Oct. 27.—Stocks lower, foreign bonds advance. Illinois Central passes dividend for first time since the Civil War. Report of United States Steel earnings for the quarter shows net result \$3,973,000 short of covering fixed charges and September net earnings the smallest since January, 1915. Sale of property carried to earnings and 4 per cent dividend left unchanged, but net deficit was \$11,822,000. Wheat advanced $2\frac{1}{2}$ cents to 57 $\frac{1}{2}$ for December delivery, as against 44 $\frac{1}{2}$ on Oct. 5.
- Oct. 28.—Sweeping Nationalist victory over the Labor party in Great Britain. Coalition Government wins 551 seats out of total 615 membership in House of Commons. London stock market advances, then declines, sterling moves uncertainly. Pennsylvania Railroad reduces dividend rate to 4 per cent, against previous 6 per cent rate and 8 per cent in 1930, 4 per cent rate being less than the lowest rate of 1921 and down to the level of the railway strike year, 1877. Railway stocks weak. Gold export engagements slacken. Steel output 29 per cent, against 28 in preceding week.
- Oct. 29.—Gold export engagements much reduced. Jersey Central passes dividend; Bethlehem Steel dividend unchanged. Stocks slightly higher, foreign bonds advance, railway bonds lower. Wheat rises 1 cent further.
- Oct. 30.—Sharp advance in stocks, foreign bonds strong again, home bonds recover somewhat emphatically. Wheat rises 2 cents to 59 $\frac{1}{2}$ for December delivery; other grains advance with wheat.
- Oct. 31.—Much talk of improving business conditions. Grain and cotton go higher, wheat rising 2 cents further to 61 $\frac{1}{2}$ cents for December, as against 44 $\frac{1}{2}$ on Oct. 5. Stocks and foreign bonds advance, Argentine State bonds rising 2 to 4 points to prices 15 to 20 above year's lowest. Domestic bonds also rise. Week's gold export \$62,000,000, of which \$53,800,000 went to France,

amounts ranging from \$725,000 to \$2,500,000 going to Belgium, Italy, Switzerland and Portugal. Week's gold imports \$19,600,000, combined with decrease of \$42,000,000 in Federal Reserve earmarkings of gold.

NOVEMBER

Nov. 2.—Rapid advance in grain and bond markets. Wheat rises $2\frac{3}{4}$ cents, making a rise of $8\frac{3}{4}$ cents a month, the largest since July, 1929. Corn rises $\frac{7}{8}$ cents, other grains $\frac{1}{2}@\frac{3}{4}$ cent. Much talk of shortage from Russia's crop of 1931. On the bond market Argentine securities rose $1@2\frac{1}{2}$ points, German Republic bonds $\frac{1}{2}@\frac{1}{2}$. German Republic 7 per cents reached 64, year's low price has been 55; German Republic $5\frac{1}{2}$ s sell at $40\frac{1}{4}$ per cent, low price of year being 31. Sterling exchange goes to $\$3.71\frac{1}{2}$, lowest in six weeks.

Nov. 3.—Election day holiday in Wall Street. Sterling at London falls to $\$3.68\frac{1}{4}$. German Reichsbank reports reserve ratio below 27 per cent, against the high point of $41\frac{1}{2}$ per cent reached since the July crisis. Wheat rises $1\frac{1}{2}$ cents further on Chicago market.

Nov. 4.—Wheat falls $1\frac{1}{4}$ cents, then rises $3\frac{5}{8}$ cents to 65 cents, the highest since June. Corn rises 3 cents. Foreign bonds very strong. Argentine securities rising $1@5$ points, German Republic issues $1\frac{1}{2}@\frac{1}{2}$. Advance of $1@5$ points numerous in home bonds. Dun's index number of commodity prices shows rise of 3 per cent for October, largest monthly advance in three weeks. Steel production 30 per cent, against 29 the week before and 28 two weeks before.

Nov. 5.—Wheat rises $2\frac{3}{4}$ cents. Many foreign bonds advance $3@6$ points; and numerous advances of $1@4$ points in domestic bonds. Stocks unchanged, sudden rise in silver bullion, which advances $1\frac{1}{2}$ cents for the day at New York to $32\frac{3}{4}$ cents per ounce, a price above the year's previous highest and 7 cents above the year's lowest. Federal Reserve gains \$34,000,000 gold for the week, the first weekly increase

in seven weeks. Open war between Japan and China threatens.

Nov. 6.—Rise in stocks; wheat advances $1\frac{3}{8}$ cents. Foreign bonds rise again, especially South American issues, but German Republic bonds are slightly lower. Silver rises $1\frac{1}{4}$ cents at New York to 34 cents.

Nov. 7.—Stocks strong; transactions 2,000,000 shares, largest Saturday business of the year except for Sept. 15, March 28 and Feb. 21. Foreign bonds irregular, home bonds very strong. Wheat declines 2 cents but recovers the loss. Silver higher at $34\frac{3}{8}$ at New York. Week's gold export from the United States only \$3,657,000, of which \$3,000,000 went to Turkey. Imports \$35,800,000, of which \$30,000,000 came from Japan. Decrease in earmarkings for the week, $\$7,378,000$.

Nov. 9.—Wheat $68\frac{1}{8}$ cents, highest reached on recovery and $23\frac{1}{2}$ cents above year's lowest of $44\frac{3}{4}$. Advance in stocks. "Averages" of domestic bonds $4\frac{5}{8}$ per cent above year's lowest, reached on Oct. 29; of foreign bonds $7\frac{1}{4}$ per cent above lowest, reached Sept. 28. Silver bullion at New York $1\frac{3}{8}$ cents higher. Government cotton crop report raises estimate 619,000 bales above October report and 1,319,000 above October estimate. Cotton market rises fractionally.

Nov. 10.—Sharp reaction in bond market and grain. Wheat declines 3c, corn $2\frac{1}{4}$, rye $4\frac{1}{2}$. Argentine bonds down $1@5$ points, German $4@5$, recovering slightly; German Republic $5\frac{1}{2}$ s fall from 42 to $38\frac{1}{2}$. Stocks irregular, railways strong. Silver at New York rises $1\frac{1}{2}$ c to $37\frac{1}{4}$, highest of the year and 1c above year ago. Reichsbank loses gold, but reserve ratio rises from 26 $\frac{7}{8}$ per cent to 27 $\frac{7}{8}$.

Nov. 11.—Foreign bonds weak, Argentine issues down $2@4$ points. Silver declines $1\frac{1}{8}$ c at New York, first decline in two weeks, during which rise had been $7\frac{5}{8}$ c. Steel output increased again to 31 per cent, against 28 three weeks before.

CHRONOLOGY OF FINANCIAL EVENTS, 1931

- Nov. 12.—Wheat declines $2\frac{1}{4}c$, bonds irregular, with Argentine issues down $2@7$ points, German $5\frac{1}{2}s$ up $1\frac{3}{4}$. Federal Reserve reports gain of \$53,900,000 gold for week, increase in note circulation only \$2,890,000, against average weekly increase of \$71,000,000 in October. Inference drawn that hoarded money is beginning to come out.
- Nov. 13.—Markets weak. Wheat declines $2\frac{1}{4}c$, silver $\frac{7}{8}c$. Home bonds lower, foreign bonds irregular, with weakness in Argentine and German issues. Japanese bonds strong, despite war news.
- Nov. 14.—Markets continue weak. Wheat down $2\frac{1}{4}c$, showing half of the rise between Oct. 5 and Nov. 9 to have been canceled. Home bonds lower, foreign generally higher. Week's gold exports only \$549,000, to South American and small European markets. Imports \$1,720,000; released from earmark, \$8,410,000.
- Nov. 16.—Wheat rises $2\frac{7}{8}c$. German bonds steady despite news of Hitler victory at Hessian Reichstag elections. Germany reports record-breaking export surplus for October of 396,000,000 marks, or \$94,200,000, against 387,000,000 in September, or \$92,400,000 and 117,000,000 in October, 1930, or \$42,120,000. Surplus of exports for ten months 2,358 million marks exceeding previous year by 987 million marks, or \$235,000,000. Edict of New York Clearing House banks against loans by others goes into force.
- Nov. 18.—Southern Pacific reduces dividend rate to 4 per cent against 6 per cent maintained since 1907. Chicago & North Western passes dividend on common and preferred. Stocks weak, wheat declines $2\frac{3}{8}c$, silver $1\frac{3}{8}c$. Steel output unchanged at 31 per cent.
- Nov. 19.—Railways accept Commerce Commission's plan for pooling revenue derived from increased rates by stipulating that distribution to hard-pressed roads be loans, not gifts. Wheat rises $1\frac{1}{2}@2c$. Federal Reserve reports \$48,000,000 gain in gold for week. Decrease of \$16,500,000 in circulation, again indicating return of hoarded money. Loans to others reduced from \$162,000,000 to \$12,000,000; total of brokers' loans reduced \$56,000,000 for week.
- Nov. 20.—Stocks fall $1@6$ points. Steel common lowest since 1915. Wheat breaks $3\frac{3}{4}@4c$ on a report of armistice in Far East.
- Nov. 21.—Stocks irregular, wheat steady. Week's gold exports only \$137,000, imports \$26,115,000, of which \$22,247,000 came from Japan.
- Nov. 23.—Stocks weak; railway labor organizations refuse to agree voluntarily to wage cuts. Wheat declines $2c$. Sterling breaks $7\frac{1}{2}c$ to $\$3.64\frac{1}{2}$, lowest since first week after British gold suspension, and comparing with $\$3.95\frac{3}{4}$ on Oct. 21.
- Nov. 24.—Recovery in stock market, also in grain, cotton and silver. Farm Board reports to Senate Committee total purchases of 329,641,052 bushels wheat at average price $81.9c$ and 1,319,809 bales cotton at average price $\$81.50$ per bale. Existing market prices, $56c$ wheat, $\$31.75$ cotton. Board's total investment, $\$377,737,750$; now holds 60 per cent of wheat purchases and nearly all cotton.
- Nov. 25.—Break of $3@6$ points in active stocks; wheat down $2\frac{1}{2}c$ to $53\frac{7}{8}c$ for December delivery, against $68\frac{1}{8}c$ Nov. 9. Sterling declines $7\frac{1}{2}c$ to $\$3.61\frac{1}{2}$. Steel output 29 per cent.
- Nov. 27.—All markets decline; sterling falls to $\$3.52$. Bonds weak. Speech of Laval in French Chamber regarding reparations carries German Republic $5\frac{1}{2}s$ down 2 points to 33, against 45 early in the month; 7 per cents down $4\frac{1}{4}$.
- Nov. 28.—Bonds lower. Week's gold imports \$28,800,000, of which \$24,300,000 came from Japan; exports only \$21,000. Decrease of \$2,800,000 in Federal Reserve earmarkings.
- Nov. 30.—Sterling falls $13\frac{1}{4}c$ to $\$3.38$, passing year's previous low price of $\$3.49$, reached on Sept. 25. Stocks rise $4@6$ points; bonds break.

X. BUSINESS AND FINANCE

DECEMBER

- Dec. 1.—Sterling declines 10 cents to \$3.39, loss of 40 cents in a week. Depreciation from parity, $32\frac{1}{4}$ per cent. Domestic bonds lower.
- Dec. 2.—Wabash Railway goes into receivers' hands. Rock Island passes dividends. Stocks and bonds lower. Sterling recovers $15\frac{1}{4}$ cents from previous day's lowest, but falls again. Steel output 29 per cent, unchanged. Reichsbank's loss of gold smaller.
- Dec. 3.—Federal Reserve reports gain of \$12,872,000 gold for week, making \$203,139,000 gain since October, against \$747,000,000 loss in six preceding weeks.
- Dec. 4.—Berlin exchange falls $\frac{3}{8}$ cent to $23\frac{1}{4}$, against $23\frac{3}{8}$ parity. Day's rate lowest since July, when it touched 20 cents. German bonds $1\frac{1}{4}$ @3 points lower.
- Dec. 5.—Mark exchange $23\frac{1}{8}$ cents. German Republic bonds recover 2@3 points on Hitler's declaration that his policy, if he were to control German affairs, would be to meet private foreign obligations, though repudiating reparation payments. Week's gold imports \$14,600,000, Japan sending \$12,100,000. Gold exports \$1,500,000; decrease of earmarked gold \$3,500,000.
- Dec. 7.—Stocks and bonds stronger. Mark exchange declined to $22\frac{7}{8}$ cents. Sterling fell to $\$3.24\frac{1}{2}$ to year's lowest and $33\frac{1}{4}$ per cent below parity. Interstate Commerce Commission granted railway petition that proceeds of higher rates, estimated at \$100,000,000, might be loaned to weaker roads, instead of being given.
- Dec. 8.—Stocks advanced, then declined. Bonds irregular, some railway securities recovering. Dividend passed by New Haven, Missouri Pacific, Texas Pacific and Colorado Southern Railroads. Sterling falls to \$3.25.
- Dec. 9.—N. Y. Central postpones action on dividend. Reichsbank rate reduced from 8 per cent to 7. Steel output $26\frac{1}{2}$ per cent.
- Dec. 10.—Bond market weak, some declines of 5 to 9 points. Southern Railway passes dividend.
- Dec. 12.—Sterling $\$3.40\frac{1}{2}$, against $\$3.24\frac{1}{2}$ Dec. 7. Bond market weak. Week's gold imports \$7,100,000 from England, Canada and South America. Gold exports \$3,300,000, of which \$2,000,000 to France. Earmarkings at Federal Reserve reduced \$1,900,000.
- Dec. 14.—Japan suspends gold payments. Japanese yen declines from 42.94 cents to 41.44, as against gold parity of 49.8. Sterling rises to $\$3.47\frac{1}{2}$.
- Dec. 15.—Heavy break in bonds, especially railway securities; stocks slightly higher. Subscriptions of \$1,784,068,900 received for treasury's offering of \$1,300,000,000 in six, nine and twelve months certificates.
- Dec. 16.—Continued decline in bonds. French import surplus for eleven months reported as 11,068 million francs, compared with 8,406 millions in the same period of 1930 and with 7,550 millions in 1929. Germany's export surplus for the same eleven months stated at 2,624 million marks, as against 1,420 millions in the same months of 1930. Steel output 25 per cent, the same as in the opening week of January, which was the lowest of the period.
- Dec. 18.—Violent recovery in bonds, with many advances in railway securities running to 5 to 9 points. Movement based on T. W. Lamont's statement to the U. S. Senate Committee that, if we apply ourselves to some aspects of our own affairs, "the foreign situation will in due course take care of itself," and his expression of disbelief that "the German people are going to repudiate" even "the German municipal issues of which there has been so much talk." Similar influence was exerted by the public statement of President Willard of the Baltimore & Ohio, that the pooling of revenue from rate advances should avert default by the weaker railways.
- Dec. 19.—Stocks and bonds continue to rise sharply, government bonds also advance. Week's gold exports \$5,664,000, mostly to Holland; im-

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

- ports \$24,516,000, of which \$22,417,000 came from Japan. Increase of earmarked gold \$3,459,000.
- Dec. 21.—Bonds advance again; stocks irregular, with railway shares strong.
- Dec. 22.—Hungary declares moratorium on government debts. Stocks advance; foreign exchange higher.
- Dec. 23.—Bonds turn weak. Steel output 21 per cent.
- Dec. 24.—Basle conference advises further moratorium on European debts and reparations. Bonds slightly lower.
- Dec. 26.—Week's gold exports \$8,357,000, chiefly to France, Belgium and Holland. Imports \$15,290,000, of which \$11,211,000 came from Japan. Increase of \$9,727,800 in gold under earmark for foreign account.
- Dec. 28.—Stocks and bonds decline.
- Dec. 30.—Steel output 22 per cent.

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

(For further information, the reader may address the following organizations)

ECONOMICS

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| <p>AMERICAN ECONOMIC ASSN., North-Western University, Evanston, Ill.</p> <p>AMERICAN FAIR TRADE LEAGUE, 71 W. 23rd Street, New York City.</p> <p>AMERICAN INSTITUTE OF ACCOUNTANTS, 135 Cedar Street, New York City.</p> <p>AMERICAN INSTITUTE OF WEIGHTS AND MEASURES, 33 Rector Street, New York City.</p> <p>AMERICAN PROTECTIVE TARIFF LEAGUE, 33 E. 10th Street, New York City.</p> <p>AMERICAN RETAILERS' ASSN., 128 W. 31st Street, New York City.</p> <p>AMERICAN STATISTICAL ASSN., INC., 236 Wooster Street, New York City.</p> <p>CENTRAL ASSN. OF ACCOUNTANTS, 51 Chambers Street, New York City.</p> <p>CHAMBER OF COMMERCE OF THE UNITED STATES, 1615 H Street N. W., Washington, D. C.</p> <p>CONSOLIDATED STOCK EXCHANGE OF NEW YORK, 14 Pearl Street, New York City.</p> <p>CONSUMERS' LEAGUE OF NEW YORK, 289 Fourth Ave., New York City.</p> <p>COOPERATIVE LEAGUE OF AMERICA, 167 W. 12th Street, New York City.</p> <p>ECONOMY LEAGUE, 1021 Park Ave., New York City.</p> <p>FAIR TARIFF LEAGUE, 40 Rector St., New York City.</p> <p>FEDERATION OF AMERICAN INDUSTRIES, INC., 511 Fifth Ave., New York City.</p> <p>FRANCO-AMERICAN BOARD OF COM-</p> | <p>MERCE AND INDUSTRY, 90 Fifth Ave., New York City.</p> <p>FRENCH CHAMBER OF COMMERCE, 4 E. 52nd Street, New York City.</p> <p>GENERAL SOCIETY OF MECHANICS & TRADESMEN OF NEW YORK CITY, 18 W. 44th Street, New York City.</p> <p>HOME MARKET CLUB, 38 Chauncey Street, Boston, Mass.</p> <p>INSTITUTE OF ECONOMICS, 26 Jackson Place, Washington, D. C.</p> <p>INTERNATIONAL ACCOUNTANTS' SOCIETY, 50 Broadway, New York City.</p> <p>INTERNATIONAL FREE TRADE LEAGUE, R.F.D. No. 2, Wilmington, Del.</p> <p>ITALIAN CHAMBER OF COMMERCE IN NEW YORK, 27 Cleveland Place, New York City.</p> <p>LEAGUE FOR INDUSTRIAL RIGHTS, 165 Broadway, New York City.</p> <p>MELON INSTITUTE OF INDUSTRIAL RESEARCH, University of Pittsburgh, Pittsburgh, Pa.</p> <p>MERCHANTS' AND CONSUMERS' LEAGUE, 500 Fifth Ave., New York City.</p> <p>NATIONAL ASSOCIATION OF COST ACCOUNTANTS, 25 W. 43rd Street, New York City.</p> <p>NATIONAL ASSN. OF CREDIT MEN, 1 Park Ave., New York City.</p> <p>NATIONAL ASSN. OF REAL ESTATE BOARDS, 310 S. Michigan Ave., Chicago, Ill.</p> <p>NATIONAL ASSN. OF RETAIL GROCERS, 601 Gumbel Bldg., Kansas City, Mo.</p> <p>NATIONAL BUREAU OF ECONOMIC RE-</p> |
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X. BUSINESS AND FINANCE

SEARCH, INC., 474 W. 24th Street, New York City.
NATIONAL CONSUMERS' LEAGUE, 156 Fifth Ave., New York City.
NATIONAL ECONOMIC LEAGUE, 6 Beacon Street, Boston, Mass.
NATIONAL FOREIGN TRADE COUNCIL, 1 Hanover Square, New York City.
NATIONAL RESEARCH COUNCIL, 29 W. 39th Street, New York City.
NATIONAL WHOLESALE GROCERS' ASSN. OF THE U. S., 6 Harrison Street, New York City.
NEW YORK STOCK EXCHANGE, 11 Wall Street, New York City.
PAN-AMERICAN ADVERTISING ASSN., 32 Burling Slip, New York City.
PETROLEUM EXPORT ASSN., INC., 25 W. 43rd Street, New York City.
PROTECTIVE TARIFF LEAGUE, 137 Centre Street, New York City.
UNITED COMMERCIAL TRAVELERS OF AMERICA, 632 N. Park St., Columbus, O.

BANKING AND CURRENCY

AMERICAN BANKERS ASSN., 110 East 42nd Street, New York City.
AMERICAN INSTITUTE OF BANKING, 420 Lexington Ave., New York City.
INVESTMENT BANKERS ASSN. OF AMERICA, 531 First National Bank Bldg., 33 S. Clark St., Chicago, Ill.
INVESTORS' VIGILANCE COMMITTEE, INC., 42 Broadway, New York City.
NATIONAL ASSN. OF MUTUAL SAVINGS BANKS, 11 East 36th Street, New York City.
NATIONAL ASSN. OF SUPERINTENDENTS OF STATE BANKS, Nashville, Tenn.
NEW YORK CLEARING HOUSE ASSN., 77 Cedar St., New York City.
PRIVATE BANKERS ASSN., 31 Nassau Street, New York City.
UNITED STATES LEAGUE OF BUILDING AND LOAN ASSNS., 22 East 12th Street, Cincinnati, O.

INSURANCE

ACTUARIAL SOCIETY OF AMERICA, 256 Broadway, New York City.

AMERICAN INSTITUTE OF ACTUARIES, 720 N. Michigan Ave., Chicago, Ill.
AMERICAN INSTITUTE OF MARINE UNDERWRITERS, 56 Beaver Street, New York City.
AMERICAN LIFE CONVENTION, Omaha, Neb.
AMERICAN MARINE INSURANCE SYNDICATE, 56 Beaver Street, New York City.
ASSOCIATION OF CASUALTY & SURETY EXECUTIVES, 1 Park Ave., New York City.
ASSOCIATION OF LIFE INSURANCE PRESIDENTS, 165 Broadway, New York City.
BOARD OF UNDERWRITERS OF NEW YORK, 56 Beaver Street, New York City.
CASUALTY ACTUARIAL SOCIETY, 75 Fulton Street, New York City.
NATIONAL AIRCRAFT UNDERWRITERS' ASSN., 1 Park Ave., New York City.
NATIONAL ASSN. OF LIFE UNDERWRITERS, 11 W. 42nd Street, New York City.
NATIONAL ASSN. OF MUTUAL CASUALTY COS., 730 Fifth Ave., New York City.
NATIONAL ASSN. OF TRAVELERS' AID SOCIETIES, 23 W. 43rd Street, New York City.
NATIONAL BOARD OF FIRE UNDERWRITERS, 85 John Street, New York City.
NATIONAL BUREAU OF CASUALTY & SURETY UNDERWRITERS, 1 Park Ave., New York City.
NATIONAL CONVENTION OF INSURANCE COMMISSIONERS, Nashville, Tenn.
NATIONAL COUNCIL ON COMPENSATION INSURANCE, 151 Fifth Ave., New York City.
NATIONAL COUNCIL ON WORKMEN'S COMPENSATION INSURANCE, 80 Maiden Lane, New York City.
NATIONAL FIRE PROTECTION ASSOCIATION, Boston, Mass.
SURETY ASSOCIATION OF AMERICA, 160 Broadway, New York City.

DIVISION XI

AGRICULTURE AND ALLIED INDUSTRIES

CONDITIONS OF AGRICULTURE

By ARTHUR M. HYDE

SECRETARY OF AGRICULTURE

PRODUCTION AND INCOME FACTORS

Average Total Output.—American agriculture in 1931 produced large crops of cotton, tobacco, and winter wheat, and short crops of hay, spring wheat, and flaxseed. There were no pronounced deficits or surpluses of the other staple field crops. Supplies of livestock, other than sheep and lambs, were not excessive as compared with the production of other post-war years. The year, in short, was one of average total production.

Decline in Returns to the Farmer.—Returns to the farmers, however, were much lower than those of the previous year, and lower even than those of the depression year 1921. It was estimated, on the basis of figures available in November, that the gross income from the agricultural production of 1931 would not exceed \$7,000,000,000, compared with about \$9,347,000,000 from the production of 1930, and \$11,911,000,000 from the production of 1929. Some of the expenses of production declined, but the saving in costs was not sufficient to offset price declines. Certain leading farm expenditures dropped only about 15 per cent, whereas the gross farm income dropped about 25 per cent.

Demand and Surpluses.—The immediate cause of the slump in farm returns was a declining demand for farm products, both at home and abroad. Underlying this factor, however, was an over-expanded condition

of important agricultural enterprises, evidence of which accumulated before the onset of the world depression in 1929. American agriculture has been burdened with surpluses repeatedly and almost continuously since the war. Lines that were greatly over-expanded prior to 1929 fell into desperate straits in 1931. Agriculture suffered with other industries from the world-wide shrinkage in the buying power of consumers. In addition, it suffered from a relatively greater overproduction than existed in non-agricultural industries.

Prices.—This was demonstrated by a much greater fall in the prices of farm commodities than in the prices of other goods. In January, the index number for the prices of representative farm commodities stood at 94, 6 per cent below the pre-war (1909-1914) level. By October this index had declined to 68. In the same period the index number of the prices paid by farmers for the commodities they usually buy declined only from 137 to 126. Relatively greater overproduction in agriculture than in other industries is not the only cause of the familiar tendency of agricultural prices to fall sooner and lower than other prices in periods of depression. It is certainly, however, the most important cause. Agricultural production continues to overshoot demand; whereas in manufacturing industries maladjustment between supply and demand show up in unemployment rather than in a persistent accumulation of commodities.

XI. AGRICULTURE AND ALLIED INDUSTRIES

CROPS

General Analysis.—Weather conditions were unusually favorable for maturing and harvesting the winter wheat crop. In the spring wheat states, however, heat and continued drought took heavy toll. Rainfall was sufficient for pasture over large areas of the interior valleys and in the Northwest, and also in the Western grazing sections. Hay production was reduced. In the Southern states, on the other hand, moisture and temperature conditions were favorable. Abandonment of fall and winter sown crops was small and the spring was favorable for planting and seeding. On July 1, the area available for harvesting totaled 360,784,000 acres, 0.2 per cent less than the harvested acreage of 1930. Hundreds of thousands of acres were subsequently abandoned in the drought areas of the Western states. While abandonment of cotton acreage was much below the average, the total acreage of all crops harvested was 2.6 per cent less than in 1930. A very large crop—787,000,000 bushels—of winter wheat overshadowed a near failure of 105,000,000 bushels of spring wheat. The total wheat crop was 8.5 per cent above the average of 1925-29. Rice production was 45,014,000 bushels, 4,000,000 bushels greater than the 1925-29 average. The cotton crop was estimated on December 1 at 16,918,000 bales, the second largest ever produced. Combined production of the major feed crops—corn, oats, barley, and grain sorghums—was 97,000,000 tons. This was 11 per cent greater than the production of 1930, but about 7 per cent less than the average annual production in the five-year period 1925-29. Corn production was estimated at 2,557,000,000 bushels, which was somewhat less than the five-year average. Oat production was 1,112,000,000 bushels, 12 per cent less than in 1930, and about 12 per cent below the five-year average. Barley production was only 199,000,000 bushels, about three-fourths of the 1925-29 average. Grain sorghum production in the Southwest was estimated at 104,500,000 bushels, more than half again as large as in

1930, and one-fourth larger than in 1929. Hay production was 72,400,000 tons, as compared with 74,200,000 tons in 1930, and 87,300,000 tons in 1929. Tobacco production was estimated at 1,610,000,000 pounds, a new record. Fruit production was large. Of the five principal fruits, peaches were more than one-third above the five-year average, apples were more than one-fifth above, pears slightly above it, orange production was about average, and only grapes were below the average.

Wheat.—Cumulative overproduction made the year a disastrous one for wheat growers. Though the world output was estimated at from 200,000,000 to 300,000,000 bushels less than that of 1930, the difference did not make a large cut in the carry-over. Relative to the reduced demand by import countries, the world's wheat surpluses were more burdensome than they were in 1930. When the war deprived Russia of its customary wheat market in western Europe and curtailed all European wheat production, the wheat industry was enormously stimulated in the United States, Canada, Argentina, and Australia. Including the estimated production of Russia but not that of China, the world's wheat output in 1930 was nearly 4,900,000,000 bushels compared with a pre-war record of about 4,100,000,000 bushels in 1913. On July 1, 1931, the world carry-over of wheat was estimated at 679,000,000 bushels, as compared with 578,000,000 bushels on July 1, 1930.

The wheat situation in recent years has been characterized by mounting world carry-overs, a proof that more wheat has been produced annually than has been consumed annually. World consumption nevertheless has increased. The 1930-31 season totaled an apparent disappearance of wheat outside Russia and China of 3,800,000,000 bushels as compared with only 3,200,000,000 bushels in 1921-22 and in 1922-23. Even in 1930-31, a depression year, the consumption was well above that of the preceding year, and about equal to that of the highly prosperous season 1928-29. In recent years the main trouble with

wheat has not been a declining consumption but a too rapidly mounting production. Wheat growers have suffered from the maladjustments of two decades. In the years of industrial expansion and thriving trade that preceded 1930, the weakness of the world's wheat industry was masked. Prices were high enough to keep poor land in production and to make good land profitable. In the seven years ended July 1, 1930, No. 2 hard wheat at Kansas City averaged \$1.28 a bushel. The crisis of the year 1929 and the ensuing depression brought to a head the underlying maladjustment between the production and the consumption of wheat. It caused a tremendous fall in wheat prices. For the United States as a whole the farm price of wheat as of October 15, 1931, was only 36.1 cents a bushel, compared with 65.6 cents on October 15, 1930. In the pre-war period—1910-14—the average farm price of wheat in the United States was 88.4 cents. Farm expenses of production and living costs are much higher than they were before the war; debt and taxes are much greater. Hence the prices paid for wheat in 1930 were literally ruinous. However, many countries showed a tendency to reduce their wheat acreage. Russia was an exception.

Cotton.—Cotton prices fell about the middle of 1931 to the lowest point touched since 1898, with no proportionate decline in farm costs of production. In consequence the cotton grower's situation became extremely serious. The difficulty, however, sprang from circumstances long in preparation as well as from the prevailing world depression. About 10,000,000 acres were added to the cotton area of the United States after the war, and methods were developed for combating the boll weevil. Meantime cotton acreage increased greatly in other countries. Importing markets, on the other hand, met with difficulty in exporting cotton goods and were compelled by economic distress to curtail their cotton imports. These influences had noticeable effects nearly a year before the crisis

of 1929. Cotton exports from the United States fell off in the latter part of the 1928-29 cotton marketing season. Germany's textile industry, which had been fairly active, became almost as depressed as Great Britain's, and textile manufacturers in other countries of central Europe found the going hard. Exports of cotton from the United States in the 1930-31 season were only 6,760,000 bales as compared with 8,044,000 bales in the 1928-29 season. Foreign cotton consumption failed to improve in the early months of the present season, which began with the second largest world carry-over of American cotton on record. The supply for the 1931-32 season was well above the previous record supply of 1926-27, and more than twice as large as the world's consumption of cotton in 1930-31.

Fruit and vegetables yielded returns much below those of 1930. Potatoes and peaches were extremely cheap; apple production was large and apple prices correspondingly low. Lessened demand lowered prices for some of the less desirable sizes of fruits and vegetables to a point below harvesting and transportation costs.

LIVESTOCK AND POULTRY

Only brief mention can be made here of other important agricultural enterprises. Livestock producers at the beginning of 1931 faced difficult marketing problems. With both the domestic and foreign demand sharply reduced, price recessions were necessary to move supplies. The total weight of livestock slaughtered under Federal inspection during the first half of 1930 amounted to 10,333,000,000 pounds, about 2 per cent more than the volume slaughtered during the corresponding period in 1930. For this larger supply, however, the producers received 28 per cent less than what they got for the livestock slaughtered during the first half of 1930. Dairymen suffered drastic cuts in their income. Poultrymen faced unusually perplexing problems. Poultry production gave relatively better returns than egg production; but

neither branch of the poultry industry yielded satisfactory profits.

FARM POPULATION

Increase.—Farm population in the United States showed a net increase in 1930 for the first time since 1922, when the department began making annual estimates of the number of people living on farms. From other data it appears that the indicated increase in our farm population last year was the first annual increase in two decades. For Jan. 1, 1931, the estimate of farm population was 27,430,000, as against 27,222,000 on Jan. 1, 1930. During 1930, it is estimated, 1,543,000 persons left the farms, as compared with 1,876,000 the previous year. On the other hand, 1,392,000 persons went from cities to farms in 1930, as against 1,257,000 in 1929; hence the net movement from farms to cities was only 151,000 in 1930, as compared with from 576,000 to 1,120,000 in the other years since 1921. On farms, however, there is a considerable surplus of births over deaths. The surplus in 1930, it is estimated, was 359,000 persons. Balancing the gains and losses for the year, leaves a net gain in farm population of 208,000 persons.

Employment Factors.—Unemployment has greatly reduced the flow from farms to cities and has stimulated somewhat the movement of city people in search of the cheaper conditions of livelihood to be found in the country. It is, of course, impossible to say on the basis of the figures for a single year whether or not the tide has turned. Urban unemployment tends to increase the farmward movement, which diminishes again with the revival of industrial activity in cities. Undoubtedly the present trend is fraught with important agricultural consequences. It will increase the difficulty of adjusting farm production to market requirements and will weaken the urban market for agricultural goods. On the other hand it has a good side, for subsistence is more easily got in the country than in the town in periods of trade depression.

AGRICULTURAL CONDITIONS AND FOREIGN MARKETS

Overproduction for Export.—

It is impossible in a brief article to discuss adequately all branches of American agriculture. One aspect of the existing situation, however, touches them all in varying degrees. Overproduction in American agriculture is largely overproduction for export. It is a result of the unbalanced expansion, not yet corrected, which took place in the war period. This affects primarily the enterprises on an export basis, since supplies reserved for home consumption cannot obtain satisfactory prices unless export surpluses have first been profitably moved. It affects enterprises on a domestic basis also, because the existence of unwieldy export surpluses in other lines prompts crop shifts that increase competition in the sheltered domestic market. Thus export surpluses tend to weaken the whole structure of agricultural prices. Foreign takings have a far greater influence on prices than their proportion of the total supply would indicate, and the first necessity for American agriculture is to discontinue overproduction for export.

Requirement of Adjustment.—In the 19th century American agricultural exports, chiefly to Europe, were enormous, particularly in cotton, cereals, and meats. The peak was reached in 1898. Then began a decline which continued until the war. This decline, far from injuring our agricultural interests, proved compatible with the greatest prosperity American agriculture had ever known. As our exports declined our home consumption increased. A good adjustment to the total demand, domestic and foreign, had been established. This favorable relationship was inevitably disturbed by the war, which temporarily created an enormous demand for certain products. Production capacity brought into existence to satisfy that demand continued after the demand had declined. True, the volume of our exports remained large after the war; but the business was not generally profitable, and

AGRICULTURAL LEGISLATION

above all it was not established on a sound basis. It rested dangerously on a credit structure that eventually collapsed. Credit is not a good permanent substitute for genuine purchasing power arising from profitable industry and trade.

Hence it seems absolutely necessary for American agriculture to readjust its estimate as to the extent to which it may safely depend on the foreign market. True, it will need that market indefinitely for some products; but it should not produce even these commodities in the excessive amounts that have characterized its policy in recent years. Surpluses cannot be forced continually into unwilling or impoverished markets. The situation has two fundamental requirements:

First, the credit and purchasing power of Europe must be restored; second, American agriculture must adjust itself to a declining export trade, because even with restored purchasing power in Europe the European demand for our farm products is not likely to be capable of absorbing surpluses as large as those we have recently produced. Europe's capacity to take American goods depends essentially on three factors: its purchasing power, the volume of its own farm production, and the quantity of farm production available to it from other sources. The first of these factors has lately declined and the other two have greatly increased. American agriculture must perforce adjust itself to the situation.

AGRICULTURAL LEGISLATION

BY MILTON S. EISENHOWER

DIRECTOR OF INFORMATION, DEPARTMENT OF AGRICULTURE

AGRICULTURAL APPROPRIATION ACT

Under the Agricultural Appropriation Act for the fiscal year 1932 Congress provided \$215,578,862 for the Department of Agriculture. This total included \$137,500,000 for Federal aid and forest road construction. An additional \$11,618,436 was provided to the Department under permanent and indefinite appropriations, and \$85,832 more by the Second Deficiency Act of 1931. The total appropriation of \$227,283,130 was exclusive of indefinite unexpended balances made available by the Agricultural Appropriation Act for 1932, and exclusive also of two year (1931 and 1932) appropriations provided by the First and Second Deficiency Acts of 1931. Congress also appropriated large sums to the Department for the administration of various emergency relief measures.

AGRICULTURAL CREDIT

Local farm-credit facilities, barely adequate in normal times, were unprepared to handle the situation re-

sulting from the 1930 drought and recent depression in farm prices. Accordingly, Congress passed legislation to supplement existing credit facilities. It appropriated emergency funds the administration of which was placed in the Department of Agriculture. All told, the final session of the Seventy-first Congress assigned \$67,000,000 for various forms of agricultural credit. It made \$45,000,000 available for loans to farmers who suffered from the 1930 drought. This money was for loans for the purchase of seed, feed for livestock, and fertilizer. An additional \$2,000,000 was appropriated for the same general purposes in a specific area that had suffered from storm and flood in 1929. Another appropriation of \$20,000,000 was made for agricultural rehabilitation (which term included necessary items for farm production) and for loans to individuals to buy stock in agricultural-credit corporations, livestock-loan companies, and similar organizations. Emergency credit provided by the Federal Government materially relieved the credit difficul-

XI. AGRICULTURE AND ALLIED INDUSTRIES

ty. Federal loans to purchase seed, feed, and fertilizer and for agricultural rehabilitation totaled approximately \$47,000,000. In addition the Federal Government advanced \$1,327,000 to individuals for the purchase of stock in agricultural-credit corporations and livestock-loan companies. Loans of this type enabled credit agencies that rediscount paper with the Federal intermediate credit banks to expand their credit facilities by several times the amount of the new capital provided. Hence the full benefit of the advances was much greater than might be supposed from their relatively small total.

Advances of this character, as noted, were provided for in the \$20,000,000 appropriation for agricultural rehabilitation and loans to individuals to buy stock in credit institutions. Under congressional authority the Secretary of Agriculture, after conferring with officials of the Federal intermediate credit banks and the Federal Farm Loan Board, set aside \$10,000,000 for the latter purpose. A National Advisory Loan Committee was appointed to assist in administering the fund. Advisory committees were also appointed in 22 drought-stricken states to make recommendations regarding loan applications. Up to Sept. 1, 1931, advances had been made representing 788 individual loans to stockholders in 49 credit corporations and livestock-loan companies.

DROUGHT RELIEF

Applicants and Borrowing.—Excluding the \$10,000,000 set aside to organize new or to strengthen existing agricultural-credit corporations, the Department had \$57,000,000 available for drought relief. More than 385,000 applicants borrowed approximately \$47,000,000 to purchase seed, fertilizer, feed for livestock, and fuel and oil for power machinery, and for agricultural rehabilitation.

Effects and Scope of the Drought.—Widespread need resulted from the severe drought that prevailed during the 1930 crop-growing season. The worst effects were concentrated in a triangular section of

the Potomac, Ohio, and Mississippi Valleys running from southern Pennsylvania, Maryland, and Virginia to southern Kansas, to Alabama, and to Texas. Neighboring states felt the drought more or less. Tens of thousands of farm families had their savings swept away, and even their subsistence endangered. Usually, when weather conditions reduce production, prices rise. No such partial compensation came to the drought-stricken areas in 1930 because demand and prices declined under the impact of the world depression. For the little they had to sell farm families got extremely low unit prices. Feeds had to be moved into deficit areas, and in many localities it was necessary also to supply food. Aid was rushed by the Red Cross and by state and local agencies. It was supplemented by Federal action when Congress, on Dec. 20, 1930, passed the first drought-relief resolution and charged the Department of Agriculture with the administration of the funds provided.

Loan Facilities.—Field offices for the handling of applications for loans were established in Washington, D. C.; Memphis, Tenn.; Fort Worth, Tex.; St. Louis, Mo.; and Grand Forks, N. D. The making of loans began about Feb. 1, and continued at a rapid rate through the late winter and early spring. Several hundred temporary workers were employed in handling the applications for loans, and valuable assistance was given in the examination of applications by a large number of district agents and specialists from the state extension forces. Loans were made in 1,646 counties in 31 states.

Loan Requirements.—All applicants for loans were required to agree to plant a garden, and also a sufficient acreage of feed crops to provide feed for their livestock. This policy was in line with that generally advocated by the agricultural colleges and extension forces in the southern states, and followed also by many agencies that assist in financing farmers.

Analysis of Loans.—Out of the \$45,000,000 appropriation, 279,466 loans were made aggregating \$39,716,797. Out of the \$20,000,000 appropria-

tion, 91,075 loans for agricultural rehabilitation were made aggregating \$5,430,783. Out of the \$2,000,000 appropriation, 14,651 loans were made, aggregating \$1,908,181. All told, 385,192 applications were approved for loans aggregating \$47,055,761. As loans were made from the rehabilitation fund to many farmers who had already borrowed from the \$45,000,000 appropriation, the number of individuals to whom loans were made is somewhat less than the total shown. On the other hand, many loans were made to landlords, each of whom financed several farm families, so that the total number of farm families financed was probably between 350,000 and 400,000. The average loan was slightly less than \$150, and in certain states, such as Oklahoma and Kentucky, the average was less than \$100.

UNEMPLOYMENT RELIEF

Application of Funds.—Congress also appropriated large sums to the Department of Agriculture for types of work that contributed to unemployment relief. In most cases the funds appropriated were additions to moneys that would ordinarily have been provided for department activities. In some cases, however, department activities were anticipated by making funds, which ordinarily would not have been available until after July 1, 1931, available during the winter and spring months, for the relief of unemployment. Increased funds were provided for the construction of Federal-aid highways, for roads and trails in the national forests, and for roads traversing the public domain. Various sums were made available to give employment in the repair, construction, and improvement of laboratory buildings, farm facilities, forest-protection facilities, and other equipment used in the department's research and service work. Altogether more than \$100,000,000 was appropriated for objects related to unemployment relief. Emergency employment was directly provided for varying periods for nearly 200,000 men, and indirectly for a much larger number in industries supplying necessary materials and services.

Federal-aid road construction was accelerated as early as April, 1930, when Congress authorized for this purpose an additional \$50,000,000, bringing the total Federal contribution for Federal-aid roads to \$125,000,000 effective with the fiscal year 1932. The actual amount expended in the fiscal year 1931 from the regular Federal-aid highway appropriations was approximately \$135,600,000, including some \$26,000,000 from the \$125,000,000 appropriation for 1932, which was made immediately available. This fund provided work for farmers distressed by the 1930 drought, as well as for unemployed urban workmen.

Forest Improvement.—Road work in the national forests provided considerable employment. Forest improvement already under way was speeded up, and \$3,000,000 was added to the regular fund for the construction of forest roads and trails. This work created a need for more equipment, such as tractors, graders, power shuttles, compressors, rock crushers, and trucks. In the first half of the current year the department purchased \$145,000 worth of such equipment. Where unemployment was extreme the department rotated available men in construction crews. For the fiscal year 1932, \$800,000 was made available to build a forest products laboratory at Madison, Wis., and \$150,000 for white-pine blister rust control in addition to the usual appropriation for that purpose.

Biological Survey.—The emergency appropriations also included \$300,000 to the Bureau of Biological Survey for the fiscal year ended June 30, 1931, for building dams, fences, telephone lines, electric, water, and septic-tank systems, and cold-storage plants; for surveys of wild-life refuges; and for the control of injurious rodents and predatory animals. About two-thirds of the expenditures made from this appropriation were for personal services.

Bureau of Plant Industry.—An emergency fund of \$75,000 was provided for the construction and improvement of farm and laboratory

XI. AGRICULTURE AND ALLIED INDUSTRIES

buildings required by the Bureau of Plant Industry, and for necessary installations in connection with the field activities of that bureau.

Bureau of Animal Industry.—A \$58,000 emergency fund was made available to the Bureau of Animal Industry for construction and development work at its farms at Beltsville, Md., and Miles City, Mont. Employment was furnished by the bureau to many men in clearing land, establishing pastures, building fences, and in constructing laboratories and other buildings.

Bureau of Dairy Industry.—A total of \$87,000 was made available to the Bureau of Dairy Industry for the construction of buildings and other improvements at dairy experiment stations at Beltsville, Md., Woodward, Okla., and Ardmore, S. D.

Department Buildings.—Appropriations aggregating \$83,480 were also provided for improvements to the department's buildings in Washington, including the modernization of its elevator and electrical systems, resulting in additional employment opportunities.

ROAD APPROPRIATIONS AND APPORTIONMENT

Advance Apportionment.—First was the authorization of an additional appropriation of \$50,000,000 for the fiscal year 1931. This addition, bringing the total authorized for the current fiscal year to \$125,000,000, was approved April 4, 1930, and immediately apportioned. It had the prompt effect of increasing the work undertaken during the summer of 1930. On Sept. 1, 1930, the appropriation of \$125,000,000 authorized for the fiscal year 1932 was apportioned. Normally the apportionment would not have been made until the latter part of December. The advancement of the date added to the amount of work undertaken during the autumn and carried over as the bulk of the work current during the early months of 1931.

State Revenue Handicaps.—Stimulated by the enlarged Federal-aid apportionment, the volume of construction work carried on and

completed during 1930 was further increased by an exceptionally long, dry working season. This resulted in an abnormally large expenditure, and left many states with seriously depleted revenues which could not be renewed except by action of the state legislatures. As in many cases the sessions of the legislatures were not convened until after Jan. 1, it seemed probable in December that unless some further action was taken by the Federal Government the resumption of construction work in the spring would be delayed because of a lack of state funds with which to match the available Federal apportionments.

Federal Aid to States.—To avoid this possibility Congress, on Dec. 20, appropriated \$80,000,000 to be apportioned among the states in the same manner as the regular Federal-aid authorizations and used by them to match the Federal-aid funds. As it was the purpose to encourage the beginning of work as promptly as possible in order to provide early relief to the unemployed, the amount of the apportioned funds which the states could claim was limited to the amount that should be actually expended by Sept. 1.

Stimulus to Construction.—This method of stimulating and advancing the construction program proved effective. Within a month \$15,000,000 of the emergency fund and \$14,500,000 of regular Federal aid had been allotted to new projects. The Federal-aid roads under construction, aggregating a little over 8,800 miles at the end of January, increased to nearly 10,400 miles by the end of March. This was virtually as much as the mileage under construction by the end of July of the preceding year; and by June 30, the end of the fiscal year, construction work was in progress on nearly 16,500 miles. Nearly \$75,000,000 of the \$80,000,000 emergency appropriation had been allotted to projects by May 31; and by August 31, the limiting date set by Congress, virtually the whole amount appropriated had been earned by completion of work.

Indian Reservations.—Authority for the Secretary of Agriculture to co-

COTTON AND GRAIN CROPS

operate with the state highway departments and with the Department of the Interior in the construction of public highways within Indian reservations was given by the enactment of Public No. 688.

Hawaii.—Benefits of the Federal Highway Act were extended to Hawaii under an act (Public No. 722) approved February 23, 1931. The measure authorized payment of not to exceed \$880,000 from funds previously authorized, appropriated, and allocated but unobligated under the Federal Highway Act for road construction in Hawaii. This sum equals the amount the Territory would have received for roads built and incorporated under the Federal aid system from 1917 to 1925.

FEDERAL FARM BOARD

Additional funds were appropriated for the Federal Farm Board. Under an act (Public No. 551) approved December 22, 1930, Congress provided \$150,000,000 as part of the Board's revolving fund. It appropriated \$100,000,000 more under the Independent Offices Appropriation Act for the fiscal year 1932 (Public No. 720). The same measure carried \$1,900,000 for the administrative expenses of the Board. It provided also for the financing of coöperative work between the Board and any Department or independent establishment of the Government. When any such Department or establishment is unable, for lack of funds, to do any work desired by the Board, the latter body may transfer money for the purpose from its own appropriations.

FEDERAL WAREHOUSE ACT

An important amendment to the

United States Warehouse Act was carried in a measure (Public No. 772) approved March 2, 1931. This act made the Federal Warehouse Act independent of, rather than subservient to, state legislation on the same subject in all instances in which the Federal act conflicted with state law. It also increased from 1 to 10 years the maximum imprisonment for violation of certain provisions of the Federal Warehouse Act.

CONTROL OF WILD ANIMALS

Authority for the Secretary of Agriculture to conduct, in cooperation with states, individuals, and public and private agencies, a ten-year cooperative program for the control of predatory and other wild animals, was provided in an act (Public No. 776) approved March 2, 1931. This measure authorized an appropriation of \$1,000,000 for the fiscal year 1932 and \$1,000,000 annually for the succeeding 9 fiscal years. It called for investigations and experiments to ascertain the best methods of controlling mountain lions, wolves, coyotes, bobcats, prairie dogs, gophers, ground squirrels, jackrabbits, and other animals injurious to agriculture and forestry. It also authorized campaigns for the destruction or the control of such animals.

Under an act (Public No. 826) approved March 3, 1931, Congress authorized the Secretary of the Interior to transfer to the control of the Secretary of Agriculture the Sullys Hill National Park in North Dakota. This park consists of about 780 acres and is hereafter to be administered as a big game preserve and as a refuge and breeding ground for wild animals and birds.

COTTON AND GRAIN CROPS

By W. F. CALLANDER

CHAIRMAN, CROP REPORTING BOARD, DEPARTMENT OF AGRICULTURE

COTTON

Production.—The 1931 cotton crop was the second largest ever

produced in the United States,—16,918,000 bales (Dec. 1 preliminary estimate)—second only to the 17,977,-

XI. AGRICULTURE AND ALLIED INDUSTRIES

000-bale crop of 1926; it was 3,000,000 bales or 21 per cent larger than the 1930 crop of 13,932,000 bales, and 1,650,000 bales or 11 per cent larger than the 5-year average (1925-29) crop of 15,268,000 bales. With the exception of the 1931 estimate, production data refer to the ginnings (converted to 500 pound gross weight bales) as reported to the Bureau of the Census by its gin enumerators. The final report by the Bureau of the Census for the 1931 crop will be issued in May, 1932. As in 1926, more than 1,000,000 bales were produced in each of seven states,—Texas, 5,270,000 bales; Arkansas, 1,855,000 bales; Mississippi, 1,725,000 bales; Alabama, 1,430,000 bales; Georgia, 1,395,000 bales; Oklahoma, 1,220,000 bales; and South Carolina 1,015,000 bales. This illustrates how widespread were the favorable weather conditions which resulted in the large 1931 crop. The production of cottonseed from the 1931 crop was 7,523,000 tons compared with 6,185,000 tons in 1930 and a 5-year average, 1925-29, of 6,784,000 tons. These are computations based upon an assumed yield of 65 pounds of seed and 35 pounds of lint from 100 pounds of seed cotton.

Value.—Total value of the lint and seed from the 1931 crop, evaluated at Dec. 1 prices, was \$564,192,000, 71.2 per cent of the 1930 value of \$793,126,000, and 39.8 per cent of the 1929 value of \$1,417,710,000. Cotton lint, at the December price of 5.7 cents per pound had a farm value of \$485,611,000, compared with 9.5 cents per pound and \$659,455,000 for the 1930 crop, and with 16.4 cents per pound and \$1,217,829,000 for the 1929 crop. Cottonseed, at the Dec. 1 price of \$10.45 per ton had a farm value of \$78,581,000, compared with \$21.61 per ton and \$133,671,000 for the 1930 production and \$30.33 per ton and \$199,881,000 for the 1929 production. When valued at average prices for the marketing season, total values are slightly different. While all of the cotton lint is normally marketed, a considerable quantity of the seed is taken back to the farm from the gin and utilized for

seed, feed and fertilizer. Thus, the cash income from cotton seed of the 1930 crop was only \$91,576,000 and of the 1929 crop only \$143,568,000.

Cotton Acreage.—The acreage of cotton harvested in 1931 was the smallest since 1923, at which time the expansion in the western portion of the Cotton Belt was accelerated, except for 1927, which followed the record 1926 crop. The 1931 acreage of 40,495,000 acres was 10.2 per cent less than the 45,091,000 acres harvested in 1930, 16 per cent less than the record 1926 acreage of 47,087,000 acres, and 9.7 per cent less than the 1925-29 average of 44,882,000 acres. The reduction in acreage compared with 1930 was general throughout the Cotton Belt and ranged from 18 per cent and 17 per cent respectively in North Carolina and Oklahoma to 6 per cent and 5 per cent in Mississippi and Missouri. In Alabama, Louisiana, Texas and Arkansas the reduction was 9 per cent, in Tennessee 10 per cent and in South Carolina and Georgia 11 per cent. Outside the Cotton Belt proper, acreage in New Mexico was 10 per cent less than in 1930, Arizona 18 per cent less, and California 28 per cent less. The area of cotton abandoned in 1931 was one of the lowest on record. Expressed as a percentage of the area in cultivation July 1, 1.1 per cent, it was the lowest of record excepting 1913, when 1 per cent was abandoned and was closely approached only in 1914, when 1.5 per cent was abandoned. In 1930, abandonment was 2.1 per cent, and the 5-year average, 1925-29, was 3.6 per cent. The revised estimate of acreage in cultivation on July 1 was 40,954,000 acres, 11.2 per cent less than the 1930 acreage, 15.8 per cent less than the record 1926 acreage and 11.9 per cent less than the average of the 5-years, 1925-29.

Cotton Yields.—A very large crop produced on a moderate acreage can only be explained by a very high yield per acre. The 1931 yield was the second highest on record. The yield of 200.1 pounds per acre was second only to the record yield of 209.2 pounds in 1914. In 1930, an average of 147.7 pounds per acre was

COTTON AND GRAIN CROPS

harvested and the 10-year (1920-29) average was 154.4 pounds. The yield per acre in 1931 was above average in every state. The abundant yield of 1931 was made with the use of much less fertilizer than for a number of years. A smaller portion of the acreage was fertilized and lighter applications were made where used. The prolonged drought of 1930, however, had minimized leaching of the 1930 applications of fertilizer and of the natural plant foods. The growing season of 1931 was practically ideal for the production of cotton. Planting conditions were generally favorable and spring weather retarded weevil propagation. On August 1, the very high condition of 74.9 per cent of normal was reported and weevil infestation was considerably below average. During August growing conditions were generally favorable except in the Delta sections of Arkansas and Mississippi, where excessive stalk growth was accompanied by poor fruiting and increased weevil infestation. On the other hand, abandonment was reported to be less than average. The month of September proved exceptionally favorable, particularly in Arkansas and Mississippi. Hot dry weather held weevil damage in check and hastened maturity of the crop. October weather was also much more favorable than usual. High temperatures favored opening of the bolls and there was a general absence of injurious rains. As a result of lower expenditures for fertilizer, labor and ginning, the 1931 cotton crop was produced more cheaply than any other crop since the World War.

GRAIN CROPS

Production and Value.—The 1931 grain season was characterized by a large crop of winter wheat and near failures of spring wheat and flaxseed. The corn crop was not as large as the average crop of recent years. Oats production was about 100,000,000 bushels below average and barley a short crop in comparison with recent years. The rye crop was very short, while the rice and buckwheat

crops were not far from average. The grain sorghum crop was large. The combined production of nine grain crops was 4,962,423,000 bushels which was 6.0 per cent greater than in 1930 and one half of one per cent greater than in 1929. The average production of recent years has been slightly over 5,000,000,000 bushels. The increased production compared with 1930 is largely due to a much larger crop of corn, which in 1930 was seriously reduced by drought. The 1931 grain crops, evaluated at Dec. 1 prices, had a total farm value of \$1,730,797,000, only 68.8 per cent of the \$2,513,634,000 farm value of the same crops in 1930, and only 47.9 per cent of the 1929 farm value of \$3,613,693,000. Production of grain crops used primarily for human food—wheat, rye, buckwheat and rice—was larger than in either of the two preceding years. In 1931, production amounted to 978,906,000 bushels, compared with 954,800,000 bushels in 1930, and 896,819,000 bushels in 1929.

All Wheat.—The total wheat crop in 1931 was the fifth largest on record. Since the Civil War, the 1931 crop has been exceeded only in 1928 and in three World War years. The crop of 892,271,000 bushels was 4 per cent greater than in 1930, and 9.8 per cent greater than the 1929 production, and was produced on an average 10 per cent less than in 1930 and 12 per cent less than in 1929. The big crop resulted from the highest yields ever recorded through the winter wheat Belt from Ohio to Kansas and South to Texas. The farm value of \$395,600,000 of the 1931 wheat crop was only 77 per cent of the value of the 1930 crop of \$514,847,000, and less than half the \$841,385,000 farm value of the 1925 crop. The farm price of wheat on Dec. 1 was 44.3 cents per bushel. A year earlier it was 60 cents, and on Dec. 1, 1929, it was 101.5 cents.

Winter Wheat.—Production of winter wheat in 1931 was 787,465,000 bushels, an increase of 185,625,000 bushels, or about 31 per cent, over 1930. An unusually favorable season resulted in an average yield per acre

XI. AGRICULTURE AND ALLIED INDUSTRIES

of 19.2 bushels as compared with 15.2 bushels in 1930 and 14.2 bushels in 1929. With the exception of the western group of states, higher yields per acre were secured this year than last in practically every state. Compared with last year, 1931 production was about 91 per cent greater in the south central group of states, 33 per cent greater in the north Central States and 9 per cent less in the Western States. The acreage seeded in the fall of 1930 was less than the acreage seeded in either 1929 or 1928, but abandonment was unusually light. As a result, the acreage harvested in 1931 of 41,009,000 acres was 3.8 per cent greater than in 1930 and 1.1 per cent greater than in 1929.

Spring Wheat.—Of the spring wheats, durum suffered worst, the crop being only 18,395,000 bushels against 57,719,000 bushels in 1930 and 54,710,000 bushels in 1929. The spring bread wheats totalled 86,411,000 bushels, compared with 198,601,000 bushels last year and 180,854,000 bushels in 1929. Mainly because of the drought the harvested acreage of spring bread wheats in the Dakotas, Minnesota and Montana dropped from 13,593,000 acres in 1930 to 8,788,000 acres in 1931 and the average yield from 10.5 bushels to 6.2 bushels. Durum wheat acreage in the four states actually harvested for grain was only 2,869,000 acres in 1931, 40 per cent less than the 1930 acreage of 4,745,000 acres, and nearly one half less than the 5,571,000 acres harvested in 1929. The drought also affected yields on the area harvested. In 1931 the yield per acre of bread wheat was only 7.8 bushels as compared with 11.8 bushels in 1930 and 10.9 bushels in 1929. Yield per acre of durum wheat in 1931 was only 6.4 bushels. In 1930 the yield was 12.2 bushels and in 1929, 9.8 bushels.

Rye.—The 1931 crop was very short, 32,746,000 bushels compared with 45,379,000 in 1930 and 34,950,000 bushels in 1929. The center of rye production in this country was almost the center of this summer's drought area. The yield per acre in 1931 was 10.4 bushels, compared with

12.8 bushels in 1930 and 11.4 bushels in 1929. The acreage cut for grain in 1931 was 3,143,000 acres, 400,000 acres less than the 1930 harvest but an increase of 89,000 acres over 1929. The acreage in 1931 increased in most states except the northern tier from Minnesota westward. While there was a general increase in planted area in all sections, the drought conditions prevailing throughout the spring and summer reduced the harvested acreage in the northwestern drought area by more than 500,000 acres from the previous year. The farm value of the rye crop was \$12,673,000, compared with \$17,419,000 in 1930, and \$29,685,000 in 1929. Due to the extremely short crop, the Dec. 1 farm price held up to the 1930 price of 38 cents. This was one of the few crops for which prices were not materially lower than in 1930. The December, 1929 farm price was 85 cents.

Buckwheat.—The production of buckwheat amounted to 8,875,000 bushels, about 27 per cent greater than the 1930 crop of 6,962,000 bushels and about two per cent greater than the 1929 crop of 8,692,000 bushels. In the Buckwheat States within the area affected by drought in 1930 there was a marked increase in the 1931 production over their respective small crops of the previous year, while the 1931 production was lower in many of the north Central States where drought was more or less prevalent during that season. The acreage of buckwheat harvested declined from 627,000 in 1929 to 573,000 in 1930, and was further reduced in 1931 to 502,000 acres. The average yield in 1931 was 17.7 bushels per acre compared with 12.2 bushels in 1930 and 13.9 bushels in 1929. Farm value of the 1931 crop was \$3,765,000 at 42.4 cents per bushel, compared with \$5,814,000 and 83.5 cents for the 1930 crop and \$8,426,000 and 96.9 cents for the 1929 crop.

Rice.—Rice production in the four states which grow nearly all the United States crop was 45,014,000 bushels (of 45 pounds each) in 1931, compared with 44,299,000 bushels in 1930 and 40,604,000 bushels in 1929.

COTTON AND GRAIN CROPS

Production in the three Southern States (Arkansas, Louisiana and Texas) was 37,014,000 bushels compared with 37,028,000 bushels in 1930 and 34,391,000 bushels in 1929. At farm prices of 60.9 cents on Dec. 1, 1931, 78.2 cents a year earlier, and 100.2 cents in 1929, the farm value of the 1931 rice crop was \$27,402,000, of the 1930 crop, \$34,631,000, and of the 1929 crop \$40,666,000.

Corn.—The 1931 corn crop for all purposes of 2,556,863,000 bushels was 24 per cent larger than the very short crop of 2,060,185,000 bushels in 1930 and one per cent larger than the 1929 crop of 2,535,386,000 bushels. The acreage of 104,970,000 was 4.2 per cent greater than in 1930 when 100,743,000 acres were grown and 7.3 per cent greater than in 1939, when the acreage was 97,806,000 acres. Yields per acre in 1931 were materially higher than in 1930 in the area affected by the drought in that year, but lower in the Western States. The production of corn for grain (husked and snapped) was about 2,200,000,000 bushels compared with 1,700,000,000 bushels in 1930 and 2,100,000,000 bushels in 1929. At Dec. 1 prices, the farm value of the 1931 corn crop was less than \$1,000,000,000 for the first time since 1903, and less than in any year since 1900. At 36.0 cents per bushel, the farm value was \$920,142,000, compared with 65.5 cents and \$1,349,218,000 in 1930 and 77.4 cents and \$1,962,832,000 in 1929.

Oats.—Production of oats was about 100,000,000 bushels below average,—1,112,142,000 bushels. In 1930, production was 1,277,764,000 bushels; in 1929, 1,118,414,000 bushels. The acreage sown in the spring was considerably larger than the acreage sown in 1930. The increased sowings were brought about by the short feed crop production caused by the drought in 1930. Farmers were anxious to replenish their supplies of feed against another possible short crop. The severe drought which prevailed in the Dakotas and Montana particularly, and in the Western States generally, caused a very heavy abandonment and very heavy diversion to

cutting for hay. In this area at least 1,000,000 acres originally intended for grain were cut for hay and a large additional acreage was entirely abandoned. As a result, the 39,722,000 acres actually harvested in 1931 was little different from the 39,729,000 acres harvested in 1930. Farm value of the crop, at 23.1 cents per bushel, was \$256,483,000, compared with 31.5 cents and \$402,713,000 in 1930, and 42.6 cents and \$475,998,000 in 1929.

Barley.—The 1931 crop of barley was a short crop in comparison with recent years. The production of 198,965,000 bushels was only about two-thirds as large as the 1930 crop of 304,601,000 bushels or the 1929 crop of 280,242,000 bushels. A very large acreage of barley is grown in the states in which the drought was severe in 1931. Abandonment was heavy and the yield per acre of 17.3 bushels fell below 20 bushels for the first time in over 20 years. The acreage of barley cut for grain in 1931 was 11,471,000 acres as compared with 12,662,000 acres in 1930 and 13,523,000 acres in 1929. Farm value of the barley crop was \$70,119,000 compared with \$118,359,000 for the 1930 crop, and \$152,334,000 for the 1929 crop. The December 1 farm price of barley was 35.2 cents in 1931, 38.9 cents in 1930 and 54.4 cents in 1929. About 80,000,000 bushels of barley are sold off the farms annually.

Grain Sorghums.—Grain sorghums, by which are meant kafir, milo, ferteria and similar plants, are grown extensively on the semi-humid areas of the southwest from Kansas to California, in sections where the rainfall is ordinarily deficient for the production of corn. In the area where they are grown, they are an important livestock feed. A large acreage and good yield per acre were secured in 1931. Production was 104,529,000, three-fifths larger than the 64,416,000 bushels produced in 1930 and one-fourth larger than the 81,041,000 bushels produced in 1929. The farm value of the crop was \$31,370,000, compared with 40,949,000 in 1930, and 57,127,000 bushels in 1929.

XI. AGRICULTURE AND ALLIED INDUSTRIES

LIVESTOCK AND MEATS

By E. W. SHEETS

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ECONOMIC DEPRESSION AND DROUGHT

An outstanding characteristic of 1931 in American livestock affairs has been the fortitude of western stockmen. Few of them will regret the passing of last summer. In addition to tremendous declines in gross income from the sale of livestock and livestock products, the West has experienced a severe drought which struck practically all regions except Arizona. In some sections, notably northeastern Montana and western North Dakota, the drought represented the second year of similar devastation in succession. Throughout the West summer pastures and ranges fell far short of supplying normal feed. Winter ranges in the intermountain areas are dry, and native desert plants made little growth this past season. Hay crops are below normal, but to offset this there are good supplies of concentrates available in all but the hardest hit areas. Throughout the East and South hay and feed crops are rather plentiful, and taking the country as a whole the crops raised for livestock feed are but slightly below average, the shortage being chiefly in hay, oats and barley from Michigan and Kansas west. Yet in spite of this combination of unfavorable circumstances in the West, stockmen are carrying on, refusing to sacrifice valuable breeding stock that represents years of painstaking effort.

BEEF CATTLE

Increase.—The number of cattle in the United States continues to increase, chiefly in the Corn Belt and in some of the States where wheat is a major crop. Since Jan. 1, 1928, the increase has been about 6 per cent; much of it has been in dairy stock, however.

Production.—Inspected slaughter of cattle during the first ten months of 1931 amounted to 6,808,000 head,

or slightly less than for the corresponding months of 1930. With the increasing population and decreasing imports of beef, the per capita supply of beef and veal was about one per cent smaller than the relatively small supply of last year and the smallest in the 31 years for which records are available.

Shipments.—Stocker and feeder demand this year has been weaker than it was last year despite plentiful supplies of low-priced feeds in the Corn Belt. Unprofitable returns from cattle feeding during the last two years and credit difficulties seem to have been the chief factors concerned. Shipments of this class of cattle from the 12 major markets into the 7 principal feeding states from July to October this year were about 3 per cent smaller than for the corresponding period of 1930 and 20 per cent smaller than the five-year average for those months.

Prices.—Since early July of this year the trend of prices for well-finished cattle has been upward, with an unusually wide spread between cattle of high and low quality. Wholesale beef prices are substantially lower than a year ago, ranging from 10 to nearly 30 per cent for the various grades, while retail prices have scarcely kept pace in the downward trend.

Breeding.—An interesting event in the industry's untiring search for improvement is the importation of Afrikaner cattle from South Africa being concluded by a Texas breeder just as the year closes. This breed is said to thrive in Africa under the most adverse conditions of heat and drought. Crosses of them will be made with breeds of beef cattle already established in this country with the hope of producing strains especially adapted to southwestern range conditions in the United States.

LIVESTOCK AND MEATS

SWINE

Expansion in Production.—The outstanding feature in the swine industry is the marked expansion which seems imminent in the face of many conditions which point to the unsoundness of such expansion. The June pig survey by the Department of Agriculture indicated that the 1931 spring crop for the United States as a whole was 2.5 per cent greater than that of 1930, the Western States showing an increase of over 15 per cent. Likewise reports on the number of sows bred or to be bred for farrowing this fall pointed to an increase of 37 per cent for the country as a whole and over 60 per cent for the Western States compared to a year ago. On the basis of intentions to breed and fall farrowings during years past, the pig crop this fall will be about 18 per cent larger than for the fall of 1930. Much of this increase seems attributable to the favorable wheat-hog ratio that has prevailed. There seems great danger that this expansion in hogs will be overdone, especially with an outlook for a greatly decreased export demand for pork and lard.

Marketing.—Strong recommendations are being made by the Federal and state agencies chiefly interested in the welfare of the swine grower, that hogs be finished for market at light weights, from 200 to 220 pounds. This would greatly reduce the total tonnage of pork. Such hogs yield a carcass which produces the size and quality of pork suited to the great bulk of consumer demand. Turnover of the farmer's invested capital is more rapid. Cost of grains is less with the finishing of lighter hogs.

SHEEP AND WOOL

Consumption Gain.—Sheep and wool growers and the many branches of industry concerned with the marketing of their products have made giant strides during 1931 toward co-operation on a broad national basis. Chief among these has been the Eat-More-Lamb Campaign sponsored by the National Wool Growers Association and the National Live Stock and Meat Board which concluded this year its second successful year. The

results of its advertising and educational effort, aided by a decline in wholesale lamb prices of about 50 per cent during the past two years, have brought about an increase in total lamb consumption in the United States of approximately 25 per cent in two years.

Wool Week.—Another has been the inauguration of National Wool Week which is just concluding an unusually successful debut as this is written. Ushered into being by the National Wool Marketing Corporation at a small meeting in the nation's Capital in August, it brought together probably an unprecedented diversity of interests. Its general committee of 100 members included officials of state wool growers' and wool marketing associations, producers, prominent dealers, wool manufacturers, members of the cutting up trade, retail and department stores, government officials, and heads of important finance schools.

The Outlook.—It is hoped by all friends of agriculture that these two broadly conceived efforts of the sheep and wool industries may lead the way by achieving a genuine and permanent coördination among the many agricultural, industrial and mercantile groups interested. It is an industry having an annual output valued at more than two and a half billion dollars. It provides employment either directly or indirectly to over three and a half million persons, and its annual payroll approximates \$1,600,000,000. As the year closes there is a prospect of both lambs and wool being to the forefront in any upturn in the general prosperity of the country which may take place. Unusually large marketings and slaughter of lambs and a probability of a 10 to 15 per cent smaller lamb crop next year than this, point to smaller supplies. Domestic supplies of wool also promise to be gone before next year's shearing season.

POULTRY AND EGGS

Market Depression.—The poultry and egg markets are nearing the close of 1931 in anything but an optimistic condition. The chief disturb-

XI. AGRICULTURE AND ALLIED INDUSTRIES

ing factor seems to be a lack of ready consumer demand. The dressed poultry market showed in October heavy receipts, large storage stocks and a lack of speculative demand leading to a larger than usual seasonal decline in prices. Total stocks of dressed poultry in cold storage on Oct. 1 amounted to some 56,000,000 pounds against a five-year average for that date of 48,000,000 pounds.

Turkeys.—On Oct. 25 the estimate by the U. S. Bureau of Agricultural Economics was that there were 2 per cent fewer turkeys on farms on Oct. 1 than on the same date in 1930, due largely to an increase in the crop of the Pacific Coast States and Texas. Stocks of frozen turkeys in storage in this country were materially less during the early part of the year than in 1930 on corresponding dates, and but 3,364,000 pounds on Oct. 1 as compared to a five-year average of 4,565,000 pounds for Oct. 1. This resulted in heavy importations, principally from Argentina. For the months of July, August, and September, total importations amounted to 4,516,052 pounds compared with

only 853,634 pounds for the same period in 1930.

RECORD OF LIVESTOCK PERFORMANCE

There are many who believe that the next great constructive step in the livestock industry looking toward improvement of breeds and a clarification of aims and utility purposes will be through record of performance. Already carefully planned research is under way to determine exactly what may be expected in the way of quality and quantity of product—meat, work, wool, eggs—not alone of the individual, but also of its offspring. A next logical step would seem to be to establish a permanent record of our super-excellent sires and dams, based upon their ability to reproduce excellence, and to have such a record represent the industry's ablest effort to measure the breeding and utility value of its finest specimens. Here is an undertaking of sufficient breadth of purpose to enlist the active help of all agencies having to do with livestock welfare.

DAIRYING

By L. S. RICHARDSON

BUREAU OF DAIRY INDUSTRY, DEPARTMENT OF AGRICULTURE

GENERAL

Expansion.—The tendency to keep more milk cows, which has been in evidence for the last three years, became general and widespread in 1931. Apparently the movement was further stimulated by the abnormally low prices for grains and commercial feeds in comparison with the prices farmers were getting for butterfat, and by the low returns from most cash crops as compared with dairy products. Prices of farm products reached a new low in December, 1931, when the average price of all farm products was but 6 per cent of the pre-war average. Farm prices of dairy products on the same date, however, were 92 per cent of their

pre-war average. In the Northeast, the unemployment situation, which checked or reversed the population movement away from farms, was a factor in permitting expansion. In the South, a contributing factor was the necessity for producing a larger proportion of the food required. In the Corn Belt and West the higher prices for butterfat, as compared with the prices of hogs and sheep, tended to shift interest to dairying.

Number of Cows.—On Jan. 1, 1931, there were 22,975,000 milk cows on farms, or 2.4 per cent more than a year earlier. The number at the close of 1931 is estimated to be about 4 per cent greater than at the beginning of the year. Very few cows were

being culled from the herds in the latter part of the year and reports indicated that farmers in all parts of the country were expecting to keep and milk more cows than they did in 1930. With more cows being milked, lower prices for feed and favorable late fall pastures, and the tendency of farmers to turn to milk and cream for ready cash, a heavy milk production was a natural and inevitable result.

PRODUCTION AND STOCKS

Total Output.—Although total butter production in the first 11 months of 1931 was estimated to be about 1,500,000,000 pounds, or 1.5 per cent more than in the same period in 1930, the production of all other manufactured dairy products decreased, with the result that the total production of leading dairy manufactured products was practically the same as for the same period in 1930. At the close of the year the production of butter and cheese was higher than a year earlier while movement into consumptive channels was only slightly greater.

Reserve Stocks.—Reserve stocks in storage had been reduced greatly by Dec. 1, thus lending support to the dairy markets. Butter stocks on Dec. 1 were only about half as large as the five-year average of 83,600,000 pounds. Stocks of American cheese were 10,500,000 pounds less than a year before and about 6,000,000 lighter than average. Evaporated milk stocks were a third less and condensed milk stocks a fourth less.

CONSUMPTION

One of the most important features of the 1931 dairy-markets situation was the increased consumption of butter and evaporated milk. Butter consumption during the first 11 months of 1931 was about 2 per cent heavier than during the same period in 1930. Comparatively low retail prices, the lowest for many years, were considered chiefly responsible for the increased consumption, although it appears that rapidly advancing butter prices in October did not affect sales to any noticeable

degree. A heavier consumption of evaporated milk was offset, at least to some degree, by a lighter demand for fluid milk. Cheese consumption in the first 11 months of 1931 had fallen off but 1.4 per cent. Retail cheese prices were relatively higher than butter prices throughout most of the year. On a milk-equivalent basis, the apparent consumption of the important classes of manufactured dairy products was 1.4 per cent greater in the first 11 months in 1931 than in the same period in 1930.

EDUCATION AND RESEARCH

Quality Improvement.—The numerous dairy organizations and associations, together with state and Federal agencies, continued to present a united front for the development of the dairy industry. Educational efforts to increase the consumption of dairy products were augmented by the efforts of research workers to develop new and better methods of utilizing milk and its products, to improve the efficiency of manufacturing methods, and to develop methods of manufacturing foreign type cheese, casein, and other products heretofore imported so that American producers may compete more successfully with foreign producers. The need further to improve the quality of milk on the farm was given increased attention, not only because the consumer is entitled to a wholesome product but because better quality in milk leads to better quality in manufactured products and, therefore, to a better demand and greater returns to the producer. In the course of the year, conferences between the Public Health Service and the Bureau of Dairy Industry resulted in an agreement to promulgate a milk ordinance embodying recommendations of the two organizations, to serve as a guide to states, municipalities, and communities, in the sanitary regulation of local milk supplies.

Breeding.—The need for better cows rather than more cows has long been recognized by leaders in the industry. Research in feeding, breeding, and management has been

carried on at most of the state dairy experiment stations, as well as at Federal stations. Results of dairy-cattle breeding research have shown that the most certain way to develop herds with an inheritance for a uniformly high level of production is through the continuous use of meritorious "proved sires." Progressive breeders, agricultural colleges, and experiment stations are proving out a few bulls each year, through the records of their own herds or by lending promising young bulls to co-operators.

Management.—One of the more recent developments in management being adopted by some of the larger commercial dairies is the use of separate barns for milking and housing the herd. This system permits the housing of the cows in box stalls or pens, where they are more comfortable than in stanchions, and require less labor for barn cleaning. A separate milking barn also reduces the amount of expensive equipment and contributes to the production of a more sanitary product.

Herd Improvement.—Dairy-herd improvement work was conducted in

45 states in 1931. On Jan. 1, 1931 there were 1,112 active associations with more than 500,000 cows on test, representing 26,308 herds. There has been some decrease in the number of associations in the last year as a result of general economic conditions. The average butterfat production per cow in dairy-herd improvement associations in 1930, the latest year for which figures are available, was 302 pounds or a gain of 87 pounds per cow in 24 years of herd-improvement association work.

Bull Associations.—Progress was made in the cooperative bull-association work during the fiscal year. The number of associations in 1930 was 296 and in 1931 the number was 359. The number of bulls in use in these associations increased from 1,280 in 1930 to 1,609 in 1931, and the number of cows owned in these associations increased from 44,578 in 1930 to 58,004 in 1931. A tabulation of the production records of the daughters of the association bulls shows an average butterfat production of 414 pounds, or an increase of 29 pounds over that of the dams of the daughters.

DISEASES AND PESTS OF LIVESTOCK

BY JOHN R. MOHLER

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GENERAL

The general health of livestock in the United States during 1931 compared favorably with that of former years especially with respect to communicable diseases most of which are being eradicated or controlled by scientific methods. The country experienced no outbreak of any serious foreign livestock disease during the year. With respect to maladies already present in the United States, definite progress was made in eradicating tuberculosis, tick fever, and others of less economic importance.

TUBERCULOSIS ERADICATION

Tuberculin Tests.—Progress in

the nation-wide campaign against tuberculosis was particularly gratifying. In the case of cattle, extensive tuberculin testing and the slaughter of animals found to be affected are rapidly reducing the prevalence of the disease. Whereas in former years the percentage of reactors to the test ranged between 3 and 5 per cent, the corresponding proportion during 1931 was 1.5 per cent, signifying that the prevalence of tuberculosis is now less than half that of former years.

Scope of Tests.—For economy and thoroughness in eradicating this disease most testing is now being conducted on a county-wide basis and those counties which are successful

DISEASES AND PESTS OF LIVESTOCK

in reducing the infection among cattle to 0.5 per cent or less are designated modified accredited areas. On November 1, 1931, a total of 1,248 counties were in this status. These counties are, in general, well distributed throughout the United States, though centers of particular activity in this respect have been North Carolina, Maine, Michigan, and Indiana. All the counties in these four states are recognized officially as being practically free from bovine tuberculosis. In 19 other states at least 50 per cent of the cattle are under supervision for the eradication of the disease. The eradication of tuberculosis from swine and poultry likewise is being conducted systematically by Federal, state, and county veterinarians in cooperation with livestock owners.

PROGRESS IN TICK ERADICATION

In the South where cattle ticks formerly infested 15 states, the eradication of this pest has continued to make substantial gains. The method consists chiefly in dipping ticky cattle in an arsenical solution of tested strength and also the maintenance of quarantines to prevent the reinfestation of areas freed of cattle ticks. Of the 15 states formerly infested with ticks, only four, Arkansas, Florida, Louisiana, and Texas, still contain quarantined areas. Tick eradication is receiving the support of most progressive livestock owners and public officials, with prospects that the areas still infested with the parasites will be greatly reduced within the next few years.

HOG CHOLERA

Effective Control of Disease.—

Though outbreaks of the serious swine disease, hog cholera, still occur, the disease no longer takes the heavy toll common before the extensive use of the preventive-serum treatment. Outbreaks during 1931 were largely the result of failure on the part of swine owners to administer the protective serum in time to prevent the onset of the disease. During the fiscal year ended June 30, 1931, the number of reported outbreaks—in most cases sig-

nifying individual premises—was 3,388, a material reduction from former years. The mortality from this disease during the last year was the lowest since official records were kept.

Serum and Virus Production.—

The security of American hog raisers from extensive hog-cholera losses is strengthened by the adequate production of high-quality serum and virus by establishments operating under Federal licenses. Federal veterinarians, cooperating as heretofore with state livestock authorities and practicing veterinarians, have continued to aid farmers in the diagnosis and control of hog cholera and related swine ailments.

ABORTION DISEASE

Recognizing that infectious abortion of cattle and other livestock is now probably the most serious malady confronting stock raisers, the Department of Agriculture is cooperating with 8 state universities and experiment stations in intensive research intended to throw new light on the malady and its control. The results thus far show the importance of sanitary procedures in preventing the entrance and spread of this disease in herds and also encourage the belief that a reasonably effective method of vaccination may be developed for use in cases where other means of control are impracticable. Research based on tests of alleged medicinal remedies for infectious abortion continues to warn against alluring claims made for them. Tests of several chemical preparations for the treatment of abortion-affected cattle gave no indication of effectiveness.

ANIMAL PARASITES

Results of the Bureau's laboratory research and of field studies during 1931 shed new light on means of controlling various animal parasites. Liver-fluke disease in sheep was successfully prevented by medicinal treatment of affected animals and the destruction of snails on pastures. Previous studies had incriminated snails as the hosts in which sheep liver flukes pass part of their life cycle. The year's work likewise led to new

XI. AGRICULTURE AND ALLIED INDUSTRIES

knowledge concerning kidney worms, nodular worms, and lungworms of swine, and of various species of roundworms and tapeworms in poultry. The practical applications of studies along these lines are described in publications of the Department of Agriculture. Such information enables stock raisers to reestablish their herds and flocks on a healthy basis after periods of former loss and discouragement.

SIMPLIFIED TEST FOR PULLORUM DISEASE

Encouraging progress in combating pullorum disease in poultry flocks was made during the year through the development by Bureau scientists of a rapid, simplified test involving the use of a stained antigen as the diagnostic agent. Besides its adaptability for field use, the improved test is much less expensive than the former tube method, which involves considerable laboratory equipment. Since the identification of infected fowls by testing is necessary for adequate con-

trol of pullorum disease, the new test promises to be a distinct asset to the poultry industry. Comparative data thus far show close agreement between the results obtained by the laboratory method and the simplified stained-antigen test.

EDUCATIONAL EFFORTS

Recognizing that the health of livestock throughout the country is influenced by their owners' familiarity with the cause and prevention of disease, the Federal Bureau of Animal Industry has disseminated extensive information through publications, radio programs, exhibits, and other informational means. These efforts, supplementing the more direct service rendered by veterinarians, have been well received. They deal both with communicable diseases, thus familiarizing owners with the purpose of existing campaigns of control and eradication, and also with lesser maladies including nutritional disturbances preventable by proper feeding and management.

DISEASES OF PLANTS

By NEIL E. STEVENS

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EPIDEMICS IN THE SOUTHERN STATES

Tobacco Mildew.—During the winter and spring of 1931, there were epidemics in the Southern States of two diseases which are ordinarily rare in this region. These were downy mildew of tobacco and late blight of potato and tomato. Downy mildew of tobacco, caused by *Peronospora hyoscyami*, has long been known in Australia and was first reported in the United States in Florida in 1921. Last spring, 10 years after the previous outbreak, the first reports of the disease came from Louisiana and southern Georgia, where it occurred in a few plant beds during the last half of March and the first half of April. During the latter half of April the disease appeared in a large number

of plant beds scattered over 13 counties in Georgia. Early in May scattered infections were found in northwestern Florida and in 7 counties of the coastal plain of North Carolina. Downy mildew spread to the Piedmont Region of North Carolina, to adjacent counties of Virginia, and finally to Maryland, where the disease appeared on a few plant beds during the first half of June.

Late blight of potato, caused by *Phytophthora infestans*, often severe during wet seasons in the potato growing regions of the Northern States, was epidemic during February and March in the Rio Grande Valley of Texas. This epidemic may well have been associated with the excessive rainfalls of January, which in portions of extreme southern Texas

DISEASES OF PLANTS

reached 300 to 500 per cent normal. The disease is reported to have occurred in practically every field in the valley and infection ranged from 25 to 100 per cent. The yield in some of the best fields is reported as being cut about half, but some of this loss may be due to excessive moisture early in the planting season. This disease also appeared in parts of Georgia, particularly in the coastal plain, where losses in individual fields ran as high as 50 per cent. The same disease occurs on tomatoes, and during March pathologists in the Chicago market reported the disease present in tomatoes shipped from Mexico, causing decay ranging in amounts from 3 to 40 per cent.

SPREAD OF INTRODUCED DISEASES

Elm Disease.—Following the discovery of the Dutch elm disease in Ohio in 1930, intensive search was made in Ohio during the summer of 1931, and, as a result of the general interest in this disease, a large number of specimens from other states were sent in for identification, not only by state and Federal pathologists, but by amateurs. Only 4 additional trees, all in Cleveland, were found infected with the Dutch elm disease, but the examination of material in the search for it brought to light a hitherto undescribed disease of elms. This disease, the symptoms of which somewhat resemble those of the Dutch elm disease, is caused by a quite different fungus. This almost accidental discovery furnishes another illustration of how limited is our knowledge of plant diseases in this country.

White Pine Blister Rust.—As a result of continued scouting for the white pine blister rust (*Cronartium ribicola*), the disease has been found in the following States from which it had not previously been reported: Maryland, Virginia, West Virginia, Ohio and Iowa.

Flag smut of wheat (*Urocystis tritici*) still persists near Alton, Ill., in fields where susceptible wheat va-

rieties, such as Harvest Queen, are grown. In Kansas, the disease was found in fields from one to several miles outside the limits of the zone where infected wheat was reported on previous surveys.

PLANT DISEASES CAUSED BY NEMATODES

An unusual number of plant diseases due to nematodes have been reported this season. This is, however, more probably due to an increasing interest in plant diseases of this type, than to actual increase in the diseases themselves. *Tylenchus dipsaci* again appeared on sweet potatoes in New Jersey, where the disease it causes is coming to be known as the "Brown Ring" disease. Thus far the disease is not widespread, or particularly serious where it has been discovered. This same nematode was found in onions near Canastota, New York, where there was a small but severe infection. This is the first report of this nematode from New York State and the first authentic report on this host in the United States. Vigorous measures were taken by the New York State authorities, and the infection is believed to have been eradicated. *Tylenchus pratensis*, which is known to be widespread on roots, rhizomes, and tubers of many plants in Northern Europe and the United States, was found to be causing notable losses on tobacco in North Carolina. *Aphelenchus parietinus* appeared to be serious on cotton seedlings in North Carolina, particularly in experimental plantings. Continued survey for the dwarf disease of strawberries, caused by *Aphelenchus fragariae*, indicated that the disease had not become severe in states north of Maryland or Kentucky, even on plantings of strawberries which came from diseased areas in 1930.

APPLE ROTS

The use of paper wraps impregnated with copper as a means of checking the spread of rot fungi in apples and pears has recently been inaugurated. This is, in a sense, a

XI. AGRICULTURE AND ALLIED INDUSTRIES

development of the use of paper impregnated with oil which has been so successfully used during the past 8 years as a means of controlling apple scald.

PHONY PEACH ERADICATION CAMPAIGN

The extent of the campaign for the eradication of the phony disease of peaches may be gauged by a sum-

mary of trees found diseased and destroyed during the summer of 1931. By States the numbers are as follows: Alabama, 5,091; Arkansas, 285; Florida, 321; Georgia, 31,661; Illinois, 2; Louisiana, 741; Mississippi, 635; North Carolina, 22; South Carolina, 46; Tennessee, 35; Texas, 207; Total, 39,046. The disease had not been found previous to 1931 in Florida or Illinois.

INSECT PESTS

By J. A. HYSLOP

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Grasshopper.—The entomological feature which occasioned the most serious losses during the year was the devastating grasshopper outbreak that occurred in the Great Plains region. Another very badly infested area centered around Klamath Lake in northern California and southwestern Oregon.

The European corn borer (*Pyrausta nubilalis* Hbn.) made but slight advance along its western border. Toward the southeast the advance was more pronounced. Practically all of southeastern New Jersey is now known to be infested, and infestations have been found on the Eastern Shore of Virginia. This insect was also found in a single township in Sheboygan County, Wisconsin.

Chinch Bug.—During the year large populations of the chinch bug (*Blissus leucopterus* Say) were built up over the normal chinch-bug belt extending from eastern Kansas diagonally across central Missouri, south-central Illinois, and central Indiana, into northwestern Ohio, with a material extension of this territory northward into Iowa, southern South Dakota, and southwestern Nebraska.

Corn Ear Worm.—Damage by the corn ear worm (*Heliothis obsoleta* Fab.) in the Middle Atlantic, East Central, North Central, and West Central States was decidedly

severe, although probably not unprecedented. Fall reports indicated that this insect was more prevalent in New England than it has been in the past ten years.

Pea Aphid.—During June late peas in Wisconsin were carrying the heaviest infestation of the pea aphid (*Illinoia pisi* Kalt.) recorded in the last eight years. During July this insect destroyed practically the entire canning pea crop in the eastern part of Michigan and was seriously damaging peas in northern and western New York.

The Japanese beetle (*Popillia japonica* Newm.) was collected during the summer at several additional places outside of the previously regulated areas, including Charleston, S. C.; points in Somerset and Worcester Counties, Md.; Cleveland and Columbus, O.; Richmond, Va.; Altoona and Erie, Pa.; Little Falls, Watkins Glen, Ft. Edwards, and Albany, N. Y.

Sod Webworms.—Very unusual damage was done this year by sod webworms (*Crambus* spp.) to sod land, corn, and tobacco in the East Central States extending from Ohio to Iowa and southward to Kentucky.

Codling Moth.—In late spring unusually heavy infestations of the codling moth (*Carpocapsa pomonella* L.) were reported from the Hudson River Valley of New York southward

to Georgia and the greater part of the East Central States westward to Nebraska and Kansas. In the Pacific Northwest the situation was more serious than it had been for several years.

Shot-hole Borer.—What appeared to be a direct result of the drought of 1930 was the heavy infestation of the shot-hole borer (*Scolytus rugulosus* Ratz.) occurring over the severe drought area.

Leafhoppers.—Severe mottling of foliage was caused by leafhoppers (*Cicadellidae*) throughout New England and the Hudson River Valley of New York, southward to North Carolina, and in Kansas. These insects were so numerous in some orchards as to interfere seriously with harvesting by the annoyance they occasioned the pickers.

Boll Weevil.—Infestations by the boll weevil (*Anthonomus grandis* Boh.) were heavy throughout southern and eastern Texas, eastern Oklahoma, Louisiana, Mississippi, southern Alabama, South Carolina, and the southern tiers of counties in North Carolina. Infestations were comparatively light in Arkansas, Tennessee, northern Alabama, Georgia, and the greater part of North Carolina.

The Colorado potato beetle (*Leptinotarsa decemlineata* L.) was unusually troublesome along the Atlantic seaboard from Florida to New Jersey. During the late spring and early summer it was quite generally reported as abnormally abundant in the New England and Middle Atlantic States and westward to the Great Plains, with a very severe outbreak in northwestern Iowa.

Cabbage Worm.—The imported cabbage worm (*Pieris rapae* L.) was unusually troublesome in the East Central States and as far westward as Minnesota and Kansas; serious depredations continued throughout this region during the greater part of the summer and well into the fall.

The potato tuber worm (*Gnorimoschema operculella* Zell.) occasioned the rejection of 1,200 lugs of

new potatoes in Los Angeles County, Calif., this spring. It was also reported as seriously damaging tobacco in localities in Kentucky, Tennessee, and Georgia, and in Florida it was reported as damaging potatoes held in storage. For the first time in many years this insect was observed during August damaging tobacco in Wisconsin.

Pickle Work.—An unusual entomological condition of the year was the appearance of the pickle work (*Diaphania nitidalis* Stoll) in the Northern States, reports of damage being received as far north as New England and Ohio.

The harlequin bug (*Murgantia histrionica* Hahn), after several years of comparative scarcity, occurred in numbers over the upper South Atlantic States, extending to southern New Jersey; it was also reported up the Mississippi Valley to southeastern Nebraska and Indiana.

Forest Tent Caterpillar.—The most severe outbreak of the forest tent caterpillar (*Malacosoma disstria* Hbn.) that has ever been recorded for the State of Virginia was experienced this year. Hundreds of acres of forest land in Buckingham and Fluvanna Counties were completely defoliated.

Spruce Budworm.—Large areas of balsam fir and several species of pine over large areas in Wisconsin and parts of North Dakota were completely defoliated by the spruce budworm (*Harmoloba fumiferana* Clem.). An outbreak was first recorded in the Cody Canyon of Wyoming in 1926, and since that time this insect has destroyed much Douglas fir. A similar outbreak is under way in the Ochoco National Forest in Oregon.

Mountain Pine Beetle.—Tremendous increases in infestations by the mountain pine beetle (*Dendroctonus monticolae* Hopk.) were reported in the Beaverhead National Forest in Montana. Control work continued to show successful reductions in the Mount Rainier National Forest and in Crater Lake National Park.

AGRICULTURAL MARKETING

BY FREDERICK V. WAUGH

UNITED STATES BUREAU OF AGRICULTURAL ECONOMICS

THE PRICE SITUATION AND MARKETING REGULATIONS

The Drop in Prices.—The continued drop in the general price level during 1930 and 1931 was especially sharp in the case of prices of agricultural products and other raw materials. From 1921 to 1929 the general wholesale price level of "all commodities" in the United States remained fairly stable, fluctuating between about 40 per cent and 50 per cent above the pre-war (1910-1914) base. The price declines during the past two years brought the general price level down to approximately the pre-war level in September, 1931. The drop in the "all commodity" price index since 1929 amounted to 29 per cent. Prices at the farm in the United States have dropped much more severely, falling from a level of 38 per cent above pre-war in 1929 to 28 per cent below pre-war in September, 1931, a drop of 48 per cent.

Difficulties of the Farmer.—The drop of 48 per cent in farm prices accompanied by a drop of only 29 per cent in wholesale prices of commodities in general has placed the farmer in a difficult position. Prices of commodities bought by farmers now average 27 per cent above the pre-war level and he must pay for these commodities with products for which he receives prices 28 per cent below the pre-war level. For example, if it took ten carloads of produce to pay the expenses of a given farm before the war, the same kind of farm operated with the same efficiency would have needed eleven carloads in 1929 and eighteen carloads in September, 1931, for the same purposes.

Raw Materials.—The drop in the price level has been world-wide and has been particularly severe in the case of prices of raw materials in all countries. This has been largely responsible for widespread attempts in many countries to control the marketing of certain products for the

purpose of maintaining prices at something like a profitable level. Measures have been taken in many countries in the attempt to limit production or shipments, to require mills or manufacturing establishments to buy a certain amount of locally produced materials, and to reduce foreign competition by means of increased tariffs or embargoes on imports.

Tariffs and Export Agreements.—Among such attempts have been the formulation of an international export allotment agreement on sugar and an international conference of wheat exporting countries which had hopes of working out some kind of export agreement for wheat. Less spectacular but effective have been the tariff increases in almost all countries which have necessitated many changes in world trade. Within the United States there has been an increasing agitation on the part of producers near the cities to decrease or prevent competition from more distant producers in other parts of the United States. This is particularly noticeable in the attempts to restrict milk sheds of the larger eastern cities during the past two years.

Current Price Trends.—As long as prices continue to fall there is likely to be further agitation for various methods of limiting production and marketing. It is, therefore, particularly interesting to note that price declines have been less rapid during the past three or four months, and prices of grains and cotton have made substantial advances during October and early November.

THE ADJUSTMENT OF PRODUCTION

In the United States the policy of all agricultural agencies has been to keep producers fully informed about the market situation and the outlook for farm products. National outlook conferences have been held in Wash-

ington, D. C., for the past eight years at which some of the outstanding agricultural economists and marketing specialists of the country have analyzed the factors influencing the market outlook for the principal crops of the country and have prepared outlook reports which are being widely used by the extension workers of the agricultural colleges and by county agents to keep farmers informed and to help them decide on changes in their farm operations or in their marketing practices which are likely to be profitable.

During the past year the agricultural outlook has been brought home to the farmer more forcefully than ever before by a series of five regional outlook conferences attended by large numbers of producers and representatives of local agricultural agencies. It is estimated that 800,000 farmers will have attended regional outlook conferences this year and that 870,000 Federal bulletins and 2,000,000 state reports are being distributed. This amounts to an increase of about 300 per cent during the last two years both in the number of farmers attending the conferences and in the number of reports distributed.

FOREIGN AGRICULTURAL SERVICE

The foreign agricultural service of the United States Department of Agriculture has been expanded and strengthened this year. Offices are now maintained in London, Berlin, Belgrade, Marseilles, Shanghai, Buenos Aires, Pretoria and Sydney. From reporters in these offices the farmers of the United States are kept in touch with current plantings and crop conditions and with current market conditions throughout the world.

Commodity specialists attached to the foreign offices also make from time to time studies of the demands and preferences to individual foreign markets. Such studies are of great value to American producers and exporters as it enables them to make profitable changes in the distribution of their products and in many cases to make changes in their grading or

packing which lead to increased sales or to higher prices in foreign markets.

THE PERISHABLE COMMODITIES ACT

Licensing.—This report last year called attention to the passage of the Perishable Commodities Act designed to eliminate unfair practices in the marketing of fruits and vegetables in interstate commerce. The Act became fully effective in December, 1930, and has had a decided effect on marketing conditions since that time. The Act requires the licensing of all dealers handling fruits or vegetables. The dealers must conduct their businesses according to regulations published by the Secretary of Agriculture. In case of dispute the Department of Agriculture investigates the case and orders a settlement. In a case of flagrant violation of the Federal regulations, the dealer's license may be suspended or revoked.

Adjustments.—During the first twelve months under the Act 16,014 licenses were issued, 2,011 complaints of alleged violations received, and 1,164 complaints finally settled, leaving 847 cases pending. About one-half the complaints filed alleged rejection of produce without reasonable cause; one-third alleged incorrect accounting; and one-sixth alleged failure to deliver in accordance with terms of sale.

Advantages.—There have always been many disputes involving these questions. It has been difficult for the party who believed himself injured or swindled to get a satisfactory settlement. To settle such cases through the regular processes of the courts was expensive and required a long time. The enforcement of the new Act is making possible quicker and less expensive settlements and is thereby helping to eliminate some of the greatest causes of friction in the marketing of perishable commodities.

GRADES AND STANDARDS

The adoption and enforcement of grades and standards and the collection and dissemination of market

XI. AGRICULTURE AND ALLIED INDUSTRIES

news continue to be among the most important marketing services of the agricultural agencies. Continued progress is being made, in both of these fields. In addition to the regular inspection work, it is necessary from time to time to adjust the requirements of grades and standards to meet changing preferences in the market and to meet a more thorough understanding of existing preferences. Such adjustments have made necessary continuous study of the demand for agricultural commodities in our markets.

The whole problem of market preferences for various qualities is receiving more and more attention from departments of agriculture, from agricultural colleges, and from farmers' cooperative associations not only for the purpose of making adjustments in grades and standards but also to bring about changes in production practices in order that the farmer may grow and sell the varieties, types, sizes and

qualities of products which are most profitable to him.

QUICK FREEZE PROCESS

The quick freeze process of storing and marketing food products has made substantial progress during the past year and may come to be a big factor in the marketing of certain perishable commodities. In this process the fruits, vegetables, meats or other foods are frozen quickly at very low temperatures and are held in a frozen condition until prepared for the table. It would appear that if the original fresh taste of extremely perishable products such as peas, asparagus, and sweet corn can be satisfactorily maintained by this process, that the season of consumption of such products may be materially increased. Such a development, if it becomes great enough, will probably have an important influence on the location of the producing areas for many products.

HORTICULTURE

BY WILLIAM A. TAYLOR

CHIEF, BUREAU OF PLANT INDUSTRY, DEPARTMENT OF AGRICULTURE

FRUIT CROPS

General.—Fruit crops were abundant in 1931; in fact, over-abundant as compared with the demand and the purchasing powers or inclinations of the public. As a result, unusually low prices prevailed as a rule. The anticipated serious effects on the 1931 crop in the extensive fruit growing regions east of the Mississippi that suffered heavily from the drought of 1930 were not realized. While there was some deterioration of orchard trees in certain areas, it was not sufficient to depress greatly the 1931 crop in any important region. As a rule, the trees had made about the normal seasonal growth before the effects of the drought of 1930 were seriously felt, and fruit bud differentiation apparently took place regardless of the dry weather.

Apples.—The estimated total ap-

ple production, subject to final revision, of about 220,000,000 bushels, was a little more than a third larger than in 1930, and a fourth larger than the average for the preceding five years, while the estimated commercial crop of 36,242,000 barrels was about 2,500,000 barrels greater than in 1930, and some 3,670,000 more than the average for the years 1925-1929. The crop was particularly heavy in the Middle Atlantic and Central States where production was greatly reduced in 1930 by the drought. In the North Atlantic and far Western States the crop was below the average in volume.

Pears.—An estimated crop of about 24,200,000 bushels was some 3,360,000 below the 1930 crop. Of interest is the fact that in the principal pear growing states of the Pacific Coast and in Michigan and New York, the

crop was only about 16,500,000 bushels in contrast to 23,000,000 in 1930, but in other states, principally those hard hit in 1930 by the drought, there were substantial increases as was the case with apples.

Peaches.—The peach crop, as estimated practically at the close of harvest, was about 77,900,000 bushels, the largest yet produced. It was about 41 per cent above the annual average for 1925-1929, and about 24,000,000 bushels more than in 1930. The 1931 figure includes about 16,750,000 bushels of clingstone and 7,700,000 of freestone peaches in California, the clingstones being of course largely canned and the freestones mostly dried.

Grapes.—Of the expected total yield of grapes of about 1,600,000 tons, approximately 1,290,000 tons were grown in California, which was some 880,000 tons less than the 2,170,000-ton California crop of 1930, of which more than 400,000 tons were not harvested. The 1931 yield in states other than California was well over 300,000 tons, which was about 27 per cent above the previous five-year average.

FRUIT MARKETING

In view of the general upward trend in fruit crop yields in excess of consumption in the fresh state, increased activity is noted among commercial concerns to find ways of profitably utilizing the surplus as well as the low grade but entirely wholesome fruits that would otherwise go to waste. This is reflected in the extent to which frozen and canned fruit juices, tomato juice, and other fruit and vegetable products are now being prepared and marketed. The delivery by dairy products companies of frozen orange and other citrus juices direct to the consumer with the family milk supply is an example of this. Several new research agencies of national as well as regional importance along these lines have been established during the year.

MEDITERRANEAN FRUIT FLY

The progress made toward the eradication of the Mediterranean fruit fly from Florida was noted in

1930. Evidence of a complete accomplishment of this became sufficient during the year to justify the entire lifting of the Federal quarantine that had been imposed because of this insect—a fact of great interest and importance to horticulturists and the consuming public as well as to entomologists.

CITRUS FRUIT COLORING

Coloring of citrus fruits to develop the characteristic color of fruit edibly ripe but which still retains a preponderance of green pigment in the skin has been practiced for some years. Methods until recently were largely empirical and the results uncertain. Research work on this problem during the year has given results, basic in character, sufficient to put this operation on a reasonably sure footing and the improved methods resulting therefrom have been very generally adopted by shippers in Florida and California.

REFRIGERATION IN TRANSIT

In transportation methods, the use of solid carbon dioxide as a refrigerant should be noted. While its possibilities have been receiving consideration for some time, much has been done during the past year to determine its real place in refrigeration both in maintaining effective temperatures in transit and inhibiting the development of destructive fungi on fruits and vegetables in transit. Apparently its use in commercial practice is becoming established.

ROOT STOCK SUPPLY

For the past several years a gradual change has been taking place in the sources from which was obtained a large proportion of the root stocks used in propagating fruit trees in the United States. From a status in which, until a few years ago, practically all of some kinds of understocks, and a large proportion of others used by nurserymen, were imported from foreign growers, a shift has taken place until adequate supplies for domestic needs are now being largely produced at home.

VEGETABLES

In vegetables, no outstanding developments have occurred. Certain factors and activities, far-reaching in potential importance, are operating, but actual accomplishments are prospective. However, an increase in interest in producing vegetables of superior quality is noted. Considerable research work is in progress on factors affecting food quality in vegetables. The establishment of new grade standards for certain canned vegetables has tended to stimulate active interest on the part of growers in improving the quality of their products which constitute the raw material for canning.

FLOWERS AND PLANTS

The interest of recent years in ornamental horticulture continues to increase. This is not restricted as to scope, but from certain standpoints the growing of flowering bulbs, not only for the flowers but for the pro-

duction of commercial supplies of the bulbs, is conspicuous. The winter production of certain flowering stocks in the open, comparable in a way to vegetable production in the "winter garden" sections has potential possibilities that are being developed by some growers in the South. In part, this is developing from the results of research work which has demonstrated that by proper storing and handling the bulbs can be brought into bloom much earlier than by the usual commercial methods.

Under the amended patent law which provides for the patenting of new, asexually propagated varieties of plants, the first plant patent was issued during the year. It was for a new variety of rose, and is dated August 18, 1931. It is designated as Plant Patent No. 1. and bears Serial Number 473,410. During the year 1931 five plant patents were issued. They cover three roses, one carnation and one dewberry.

FORESTRY

By HERBERT A. SMITH

ASSISTANT FORESTER, UNITED STATES FOREST SERVICE

FOREST LAND AREA

With agriculture overproducing, the trend in the East is towards the reversion of farm land to forest instead of towards clearing more forest land for farms. In the Northeast, indeed, reversion has been under way for fifty years. Agriculture is still shifting westward. Between 1919 and 1929 the land in harvested crops west of the Mississippi increased by more than 20,000,000 acres; east of the Mississippi it decreased in every state but two, and more than 19,000,000 acres. Declining soil fertility, principally due to erosion, is one reason. Submarginal farm land in the East seems bound to increase substantially. Most of it is potential forest land. It increases the dimensions of the already large problem of how to obtain sound utiliza-

tion of a vast area unusable for other than forest purposes.

Pending completion of new estimates of forest area, timber stands, forest growth, and forest depletion undertaken by the Forest Service in 1931, the results of which will be placed before the Timber Conservation Board (see THE AMERICAN YEAR BOOK, 1930) early in 1932, only broad approximations can be given, with all figures tentative. Earlier estimates of forest area will be revised upward. Abandoned farm land that has begun to restock with forest growth, and stump lands and old burns whether restocking or not, are classed as "forest land". Land which is not capable of producing saw or pulp timber in commercial quantities, but which produces forest growth often important for watershed protection and some-

times for local utilization, makes up some 100,000,000 acres of "non-commercial forest land." Of the forest land capable of growing timber as a commodity 10,000,000 acres is included in National and State Parks and other public and private reservations. Nearly 500,000,000 acres constitutes what may be called the commercial forest land of the continental United States available for commodity use. About three-fourths of this land is in the East, with 94 per cent in private ownership, as against 35 per cent of the western one-fourth.

STANDING TIMBER

Supplies.—The present stand of saw timber and cordwood on this land approximates 490 billion cubic feet, of which saw timber forms less than half. Saw timber is in the United States commonly estimated in terms of board feet. In the East a present saw timber stand of more than 350 billion board feet is 97 per cent privately owned; in the West a stand of more than 1,310 billion board feet is divided nearly equally between public and private ownership. The Federal Government owns nearly 94 per cent of the western public saw timber and 73 per cent of the eastern.

Drain and Replacement.—The 1929 lumber production was reported by the Census as 36.89 billion board feet; that of 1930 was estimated by the Federal Reserve Board at 27.14 billion, and that of 1931 by the National Lumber Manufacturers' Association at 18 billion. More than two-thirds of the cut comes from the South and the Pacific Northwest, with the South leading. The new Forest Service estimate of the annual forest drain from all sources is considerably lower than formerly, but is higher for the drain upon saw timber. The replacement through growth is much less than the drain, and for saw timber the drain is nearly six times the replacement. In most of the country the present cut of saw timber cannot be maintained, not for lack of forest land but for lack of suitable growing stock, especially in the higher age classes.

THE LUMBER INDUSTRY

Interregional Lumber Competition.—The lumber industry is intensely and destructively competitive, due primarily to the pressure to liquidate western stumpage. West Coast lumber reaches the Atlantic seaports by way of the Panama Canal, and the Mississippi Valley by rail, to compete with the output of the South and with the more local supplies. Freight rates lessen the stress of extra-regional competition in proportion to the length of rail haul, but except in the South depletion of the eastern forests compels importations from outside with corresponding price levels. As a rule, however, the western pressure to liquidate and the low cost of water transportation mask the effects of eastern depletion and discourage timber growing. Very little private forest land is being placed under management with a view to obtaining permanent sustained yields of saw timber, either in the East or in the West.

West Coast Overproduction.—Nearly one-half of the western saw timber supply is in western Oregon and Washington. In the five years 1925-1929 the lumber cut of this region averaged 10 billion board feet annually. Nine-tenths of this was from private timber, mainly virgin. The private and public saw timber stand of the region is theoretically sufficient to permit of continued operations through the present century at the rate prior to the depression, without other forestry practices than protection against fire. In point of fact much of the present stand can not be cut without materially higher operating costs than those of the past. Higher lumber prices would increase the use of substitutes as well as reduce effective demand, and would stimulate production elsewhere. A growing realization of this is one of the causes of urgent West Coast liquidation to escape carrying charges. Manufacturing capacity is overdeveloped and private stumpage capitalization excessive.

Proposed Relief.—The lumber industry, confronted like the coal and

XI. AGRICULTURE AND ALLIED INDUSTRIES

oil industries with extreme instability because of an overdeveloped productive capacity, financial overloads of raw material, and inability to bring about of its own motion a balance of production with market demands, has anxiously awaited the recommendations of the Timber Conservation Board. The Board organized in January, 1931, created a large advisory committee to work up data, and appointed a special committee on lumber survey, to study the relationship of current production to market requirements. This committee found overproduction evidenced in excessive mills stocks and recommended curtailment of production below orders until a more normal balance should be reached. The Board published the recommendation, and manufacturers reduced their stocks progressively throughout the last 6 months of the year. Lower taxes on timber to lighten carrying charges, less marketing of public timber, public permission to control production, and the allocation of national-forest timber where practicable to individual private enterprises for harvesting with their own under a single sustained yield operating plan, are other forms of relief proposed and under study by the Board through its advisory committee. The life of the Board is to July 1, 1932.

LAND UTILIZATION QUESTIONS AND MEASURES

The report of the Public Domain Commission appointed by President

Hoover in 1930 was made public March 4, 1931. It recommended legislation granting to the states all the remaining public lands except areas which the Federal Government should reserve for such purposes as national defense, reclamation, reservoir sites, and national forests and parks. For lands not accepted by the states Federal administration or regulation was advocated. A national conference on land utilization held at Chicago in November, 1931, at the call of Secretary of Agriculture Hyde and the Association of Land Grant Colleges and Universities, recommended Federal administration of the public domain range lands and lands valuable for watershed protection, and Federal and state action of various forms to promote better land use, particularly with reference to lands submarginal for agriculture and idle cut-over and other lands. Amplified policies of public acquisition were held to be one of the needs, to take over and administer in the best public interest suitable areas not profitably employable by private owners. A National Land Use Planning Committee was recommended. The State of New York adopted by popular vote in November an amendment to the State Constitution inaugurating a ten-year program of submarginal and cut-over land acquisition and reforestation, and Minnesota enacted legislation greatly strengthening its provisions for administering and acquiring forest lands under a broad state policy.

FISHERIES OF THE UNITED STATES

BY LEWIS RADCLIFFE

DEPUTY COMMISSIONER, U. S. BUREAU OF FISHERIES

GENERAL

During 1929 the catch of fishery products in the United States and Alaska exceeded that of any previous year, amounting to 3,567,000,000 pounds, valued at \$123,054,000. The commercial fisheries furnished employment to more than 191,000 per-

sons, of whom about 123,000 were fishermen, 4,000 were employed on transporting craft and 64,000 were engaged in the wholesale and manufacturing industries. There were prepared in packaged form 84,397,000 pounds valued at \$14,813,000 and 121,543,000 pounds were frozen. The

FISHERIES OF THE UNITED STATES

production of cured fish exceeded 119,000,000 pounds valued at \$18,000,000. In the canning trade, the most important process of manufacture, the pack in 1930 amounted to 576,685,000 pounds valued at \$82,858,000 and the output of by-products was valued at \$23,721,000. Imports of fishery products for consumption were valued at \$50,830,000 while domestic exports were valued at \$17,276,000.

MANUFACTURED PRODUCTS

Canned Goods.—During 1930, 464 establishments were engaged in the canning of fishery products in the United States and Alaska. The total production amounted to 14,767,186 standard cases (576,685,454 pounds net weight), valued at \$82,858,261, a decrease of 18 per cent in value of canned products as compared with 1929. Salmon canned on the Pacific Coast, mainly in Alaska, accounted for 6,086,479 standard cases (292,150,992 pounds), valued at \$42,835,953, 52 per cent of the total value of all products canned in 1930. Sardines, with a production of 4,378,545 standard cases (177,988,284 pounds), valued at \$13,200,999, accounted for 16 per cent of the total value. Sardines were canned in California and Maine. Tuna and tunalike fishes with a production of 2,010,640 standard cases (48,255,360 pounds), valued at \$13,055,876, accounted for 16 per cent of the value also. Tuna and tunalike fishes were canned in California only. The remainder of the production consisted principally of shrimp, clam products, and oysters.

By-products.—By-products of the fisheries worth \$23,720,778 were manufactured in 1930. Excluding marine-pearl shell products, statistics for which were not included in 1929, there was a decrease of 19 per cent in the value of the production. The most important by-products were 126,605 tons of marine-animal meals and scrap, with a value of \$5,976,669; fresh-water mussel shell products, such as buttons and novelties, valued at \$5,007,419; marine-pearl shell products, also consisting of buttons and novelties, valued at \$4,544,147; 14,704,784 gallons of marine-animal oils,

valued at \$4,200,064; and 347,056 tons of oyster-shell products, such as crushed shell for poultry and lime, valued at \$2,595,252. The remainder, valued at \$1,397,227, consisted of liquid glue, herring skins and scales, shark skins, fins, and meat, agar agar, pickled whale meat, whalebone, and isinglass.

Cured Products.—The production of cured fishery products in the marine and lake sections of the United States and Alaska in 1929 amounted to 119,257,056 pounds, valued at \$18,191,081. Of this amount 75,832,709 pounds, valued at \$7,347,253, were salted; 36,490,815 pounds, valued at \$9,446,612, smoked; 4,746,634 pounds, valued at \$1,214,205, dried; and 2,186,898 pounds, valued at \$183,011, spiced. Mild cured salmon was the most valuable salted product, amounting to 12,433,559 pounds, valued at \$3,547,175. Cod and Scotch-cure Alaska herring were other important salted products. Among the smoked products salmon, including kippered salmon, was the most important item with respect to value, amounting to 8,973,348 pounds, valued at \$3,095,501. Cisco, chubs, and tullibee and sturgeon were other important smoked products. Shrimp was by far the most valuable dried product, accounting for 2,727,720 pounds, valued at \$1,052,883. Salmon was the only other dried product of importance. Alewives were the most important spiced product, accounting for 1,657,500 pounds, valued at \$63,800. Other spiced products were sea herring and lake herring.

Frozen Packs.—In 1930 the freezing plants in the United States and Alaska, reporting their activities to the Government, packed 139,297,228 pounds of frozen fishery products, with an estimated value in the cold-storage warehouses of \$16,500,000. This is the largest frozen pack of fishery products on record and an increase of 15 per cent as compared with the pack in 1929. The average monthly holdings amounted to 62,430,000 pounds during 1930, or 25 per cent over the 5-year average of monthly holdings. The most important frozen products were cod, had-

XI. AGRICULTURE AND ALLIED INDUSTRIES

dock, haddock fillets, hake, and pollock, salmon, halibut, mackerel, whiting, and sea herring.

NEW ENGLAND STATES

Record Catch.—In 1930 the fisheries of Maine, New Hampshire, Massachusetts, Connecticut, and Rhode Island employed 17,160 fishermen, or 3 per cent more than in 1929. The catch was the largest and most valuable on record amounting to 694,286,086 pounds, valued at \$29,072,566. This is an increase of 15 per cent in the catch and 13 per cent in the value of the catch as compared with 1929.

Vessel Fisheries.—In 1930 landings of fish by American vessels at Boston and Gloucester, Mass., and Portland, Me., amounted to 350,801,470 pounds as landed, valued at \$12,785,452. This is the largest catch on record but the value of the catch was 2 per cent less than in 1929. Haddock landings amounted to 189,371,333 pounds.

Mackerel.—The catch of the mackerel fishery in 1930 amounted to 43,156,885 pounds, a decrease of 7 per cent as compared with 1929. Although the catch was less than in the previous year it was greater than in any other year since 1905 with the exception of 1926.

Packaged-fish.—In 1930 the packaged-fish trade in New England, centering at Boston and Gloucester, Mass., and Groton, Conn., decreased 7 per cent in amount and 18 per cent in value as compared with 1929.

Sardines.—The sardine canners in Maine packed 1,399,212 standard cases, valued at \$4,459,071, during 1930. This is considerably below the ten-year average, and is a decrease of 31 per cent in the quantity and 35 per cent in the value as compared with 1929.

MIDDLE ATLANTIC STATES

Increased Catch.—In 1929 the fisheries of New York, New Jersey, Pennsylvania and Delaware employed 10,491 fishermen or 5 per cent more than in 1926, the most recent year for which statistics are available. The catch amounted to 190,772,611 pounds.

valued at \$14,137,608, an increase of 14 per cent in the catch and 13 per cent in the value of the catch as compared with 1926. Landings of fish at New York City and Groton, Conn., amounted to 57,255,000 pounds in 1930, 24 per cent less than in 1929 and also less than in 1928, but considerably greater than for any other year since 1921.

Shad.—In the Hudson River, the shad fishery was carried on by 245 fishermen in 1930. The catch amounted to 61,441 shad, weighing 206,504 pounds, and valued at \$33,372 to the fishermen. This represents a slight increase over 1929.

CHESAPEAKE BAY STATES

Decline In Catch.—In 1929 the fisheries of Maryland and Virginia employed 18,470 fishermen or 26 per cent less than in 1925, the most recent year for which records are available prior to 1929. The catch amounted to 274,673,437 pounds, valued at \$11,580,628. This is a decrease of 18 per cent in the catch and 17 per cent in the value of the catch as compared with the quantity and its value in 1925.

Menhaden, Crabs and Oysters.—Although the menhaden industry of Virginia produced 13 per cent more meal and 44 per cent more oil during 1930 than in 1929, the total value was 5 per cent less. The crab industry had a good year in 1929 with a production larger than in any previous year. The oyster industry continued to decline with a production of 43,114,000 pounds in 1929, the smallest on record.

Shad.—In 1930 the shad and alewife fisheries of the Potomac River were prosecuted by 608 fishermen. The catch amounted to 175,150 shad, weighing 601,193 pounds, valued at \$98,041 to the fishermen, a decrease of 45 per cent in the number and 31 per cent in the value as compared with 1929.

SOUTH ATLANTIC AND GULF STATES

In 1929 the fisheries of North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana,

FISHERIES OF THE UNITED STATES

and Texas employed 26,643 fishermen, or 7 per cent less than in 1928. The catch amounted to 535,394,859 pounds, valued at \$14,903,948, an increase of 18 per cent in the catch and a decrease of 7 per cent in the value as compared with 1928. The production of canned shrimp in 1930 decreased 10 per cent in both quantity and value as compared with 1929. The production of canned oysters in 1930 was considerably less than in 1929. In 1930 the products of the menhaden industry showed a considerable decrease in both quantity and value as compared with 1929. In 1930 the quantity of sponges sold on the exchange at Tarpon Springs, Fla., amounted to 414,082 pounds, valued at \$802,938, an increase of 9 per cent in quantity and 14 per cent in value as compared with 1929.

PACIFIC COAST STATES

Record Catch.—In 1929 the fisheries of Washington, Oregon, and California employed 19,992 fishermen, or 1 per cent more than in 1928. The catch was the largest and most valuable on record, amounting to 1,034,433,666 pounds, valued at \$25,038,414. This is an increase of 47 per cent in the catch and 22 per cent in the value as compared with 1928.

Salmon.—In 1930, an "off" year, the pack of salmon was 35 per cent less than in 1929, due, mainly, to the smaller pack of humpback or pink salmon in the Puget Sound district. Compared with 1928, the previous "off" year, there was an increase of 25 per cent in the pack.

Sardines, Tuna and Mackerel.—In 1930 the pack of sardines in California decreased 22 per cent in quantity and 27 per cent in value as compared with the record year in 1929. The production of canned tuna in 1930 was by far the largest on record, amounting to 2,010,640 pounds, valued at \$13,055,876. This is an increase of 34 per cent in quantity and 32 per cent in value as compared with 1929. The mackerel canning industry in California showed a considerable decrease in 1930 as compared with 1929.

Halibut.—In 1930 the total catch of halibut by United States and Cana-

dian vessels amounted to 49,408,000 pounds, valued at \$4,974,000, a decrease of 11 per cent in quantity and 26 per cent in value as compared with 1929. It also is less than in any year during the five-year period from 1925 to 1929. Of the total catch in 1930, 83 per cent was taken by United States craft and 17 per cent by Canadian craft.

GREAT LAKES

In 1929 the lake fisheries (Ontario, Erie, Huron, Michigan, Superior, and Namaken, Lake of the Woods, and Rainy Lake) of the United States and Canada produced 114,826,907 pounds of fish and shellfish. Of the total, the United States accounted for 85,389,467 pounds, valued at \$6,787,750. The total catch, as well as most of the important species, showed an increase in 1929 as compared with 1928. However, these figures are not strictly comparable with previous years in every instance due to a revised and more complete method of collection used in the lake fisheries in 1929. The catch of ciscoes continued to decline. Only 128,000 pounds were taken in the United States in 1929 as compared with 35,000,000 pounds in 1918. An increase occurred in the catch of every lake except Erie. The Canadian catch amounted to 29,437,440 pounds, practically the same as in 1928.

ALASKA

Fisheries.—The fisheries of Alaska during 1930 employed 27,568 persons, of whom 10,189 were fishermen, 15,453 were employed in the wholesale and manufacturing industries, and 1,926 in transporting fishery products. The catch in the round weight, exclusive of whales, amounted to 611,285,108 pounds, valued at \$12,285,313. The round weight of whales could not be determined, but their products amounted to 9,416,475 pounds, valued at \$470,265. Of the total catch, exclusive of whales, 426,441,857 pounds, valued at \$8,040,786, consisted of salmon; 182,863,624 pounds, valued at \$4,136,351, consisted of other fish; and 1,979,627 pounds, valued at \$108,176, consisted of shellfish. There were 260

XI. AGRICULTURE AND ALLIED INDUSTRIES

establishments (exclusive of duplication) engaged in the fisheries trade in Alaska in 1930. Of these, 153 canned fish, 95 cured fish, 24 manufactured by-products, and 46 handled fresh and frozen fishery products. The output of these establishments amounted to 370,564,027 pounds, valued at \$37,679,049. The salmon industry was by far the most important and produced 259,143,338 pounds of products, valued at \$31,532,488. In value, the halibut industry was next in importance and produced 31,557,084 pounds of products, valued at \$2,991,400. The herring industry ranked third and produced 68,144,048 pounds of products, valued at \$2,133,677. Of the remainder, whale, clam, and shrimp products were most important in value.

Fur Seals.—The Pribilof Islands fur-seal herd, which is under the jurisdiction of the Department of Commerce, Bureau of Fisheries, now num-

bers about 1,127,000. The herd has reached a size where it was possible to kill approximately 50,000 surplus males this year without affecting the normal growth of the herd. The skins are sold at public auction at St. Louis, Mo. At the sale held March 30, 1931, 11,503 black-dyed skins and 9,568 logwood-brown-dyed skins, a total of 21,071, were sold for Government account at a gross price of \$453,699.75. In addition, 2 confiscated fur-seal skins were sold for \$1. The fall offering of fur-seal skins in 1931 was divided, the first sale being August 24, when 9,125 black dyed and 6,000 logwood-brown dyed skins were sold for \$282,642.75. On Oct. 19 there were sold 9,515 fur-seal skins taken on the Pribilof Islands and 32 confiscated fur-seal skins, for which the total gross receipts were \$153,953.75. At the October sale there were sold also 445 blue-fox and 26 white-fox skins from the Pribilof Islands.

FISHERIES OF THE UNITED STATES AND ALASKA*

Sections	Fisher- men Num- ber	Fish- ing Ves- sels Num- ber	Fish- ing Boats Num- ber	Per- Trans- sons on port- Trans- ing port- ers ers Ves- sels		Products	
				Num- ber	Num- ber	Pounds	Value
New England States.....	17,160	731	11,617	404	154	694,286,000	\$ 29,072,000
Middle Atlantic States...	10,491	583	4,396	284	32	190,773,000	14,138,000
Chesapeake Bay States...	18,470	406	13,415	855	459	274,674,000	11,581,000
South Atlantic and Gulf States.....	26,643	614	17,541	757	193	535,395,000	14,904,000
Pacific Coast States.....	19,992	799	7,659	310	125	1,034,434,000	25,038,000
Mississippi River States..	12,310	—	15,538	27	13	100,903,000	4,449,000
Lake States.....	7,159	500	3,479	77	36	85,389,000	6,788,000
Alaska.....	10,921	734	5,420	1,716	416	651,423,000	17,084,000
Total.....	123,146	4,367	79,065	4,430	1,428	3,567,277,000	\$123,054,000

* All figures are for 1929, except those for the Mississippi River and tributaries. In this section the figures on the catch of mussels are for 1929 and other figures are for 1922.

FISH PROPAGATION

Output.—The output of fish-cultural stations of the U. S. Bureau of Fisheries for the fiscal year 1931 totaled 7,121,806,000 fish and eggs, representing a decrease in output of 448,677,000 as compared with the previous year. This output may be summarized as follows:

Game species.....	198,339,000
Commercial species (anadromous).....	258,707,000
Commercial species (interior waters).....	810,706,000

Commercial species (marine)...	5,828,074,000
Miscellaneous species.....	25,980,000

Total..... 7,121,806,000

Distribution.—The total distribution of the 383 state hatcheries amounted to nearly 4,085,900,000, of which 220,233,000 were trout; 11,922,000 black bass; 414,422,000 other game fish; and 3,468,297,000 were commercial species. The number of fish cultural employees at State hatcheries was 1,229 and expenditures for the propagation of fish totaled \$3,636,000.

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

(For further information, the reader may address the following organizations)

- AMERICAN ASSN. OF NURSERYMEN, Louisiana, Mo.
- AMERICAN COUNTRY LIFE ASSN., 375 Lexington Ave., New York City.
- AMERICAN FARM BUREAU ASSN., 58 E. Washington St., Chicago, Ill.
- AMERICAN FISHERIES SOCIETY, 2273 Woolworth Bldg., New York City.
- AMERICAN FORESTRY ASSN., 1523 L Street N. W., Washington, D. C.
- AMERICAN GAME PROTECTIVE AND PROPAGATION ASSN., 233 Broadway, New York City.
- AMERICAN NATIONAL LIVESTOCK ASSN., Denver, Colo.
- AMERICAN ORNITHOLOGISTS' UNION, U. S. National Museum, Washington, D. C.
- AMERICAN PHYTOPATHOLOGICAL SOCIETY, Bureau of Plant Industry, Washington, D. C.
- AMERICAN POULTRY ASSN., Fort Wayne, Ind.
- AMERICAN SOCIETY OF AGRONOMY, Ames, Ia.
- AMERICAN SOCIETY OF ANIMAL PRODUCTION, Lafayette, Ind.
- AMERICAN SOCIETY OF EQUITY, 311 Daily Star Bldg., Minneapolis, Minn.
- AMERICAN SOCIETY FOR HORTICULTURAL SCIENCE, Geneva, N. Y.
- AMERICAN SOCIETY OF MAMMALOGISTS, Johns Hopkins Medical School, Baltimore, Md.
- AMERICAN VETERINARY MEDICAL ASSN., 716 Book Bldg., Detroit, Mich.
- ASSN. OF LAND-GRANT COLLEGES AND UNIVERSITIES, Newark, Del.
- BOYCE-THOMPSON INSTITUTE FOR PLANT RESEARCH INC., YONKERS, N. Y.
- FARMERS' NATIONAL COUNCIL, Bliss Bldg., 35 B Street N. W., Washington, D. C.
- FARM WOMEN'S NATIONAL CONGRESS, Clarksville, Ia.
- FEDERATED FARM WOMEN OF AMERICA, 26 Jackson Place, Washington, D. C.
- INSTITUTE OF AMERICAN MEAT PACKERS, 509 S. Wabash Ave., Chicago, Ill.
- INTERNATIONAL FARM CONGRESS OF AMERICA, Continental Bldg., Kansas City, Mo.
- IZAAK WALTON LEAGUE OF AMERICA (THE), 214 W. Huron Street, Chicago, Ill.
- JEWISH AGRICULTURAL SOCIETY, INC., 301 E. 14th Street, New York City.
- MIDDLE ATLANTIC FISHERIES ASSN., Bridge Arch No. 11, New York City.
- NATIONAL ASSN. OF AUDUBON SOCIETIES, 1974 Broadway, New York City.
- NATIONAL BOARD OF FARM ORGANIZATIONS, 1731 I Street N. W. Washington, D. C.
- NATIONAL DAIRY COUNCIL, 307 N. Michigan Ave., Chicago, Ill.
- NATIONAL EDUCATIONAL AND COOPERATIVE FARMERS' UNION OF AMERICA, 1731 I Street N. W., Washington, D. C.
- NATIONAL FERTILIZER ASSN., Investment Bldg., Washington, D. C.
- NATIONAL GRANGE OF THE PATRONS OF HUSBANDRY, 630 Louisiana Ave., N. W., Washington, D. C.
- NATIONAL HIGHWAYS ASSN., 18 Old Slip, New York City.
- NATIONAL LIVESTOCK AND MEAT BOARD, Old Colony Bldg., Chicago, Ill.
- NATIONAL POULTRY COUNCIL, Davisville, R. I.
- SOCIETY OF AMERICAN FLORISTS AND ORNAMENTAL HORTICULTURISTS, 247 Park Ave., New York City.
- SOCIETY OF AMERICAN FORESTERS, 839 17th Street N. W., Washington, D. C.
- U. S. LIVESTOCK SANITARY ASSN., Livestock Exchange Bldg., Wichita, Kan.
- VEGETABLE GROWERS' ASSN. OF AMERICA, c/o F. L. Allen Co., Philadelphia, Pa.
- WOMEN'S NATIONAL FARM AND GARDEN ASSN., 26 E. 35th Street, New York City.

DIVISION XII

MINERAL INDUSTRIES

MINING AND ORE DRESSING

By CHARLES E. LOCKE

PROFESSOR, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

ECONOMIC DEPRESSION AND THE MINERAL INDUSTRY

General.—If 1930 was a dark year for the mineral industries the succeeding year of 1931 was jet black by comparison. Consumption of metals and minerals dropped lower and lower and many stocks increased in spite of efforts to lessen production. Prices were cut further. Profits dwindled even to the vanishing point or became heavy losses for many companies. Dividends were consequently generally omitted, and the prices of mining stocks fell to a fraction of previous quotations. Curtailment became general and every effort was made to reduce costs. As is always the case under such conditions, the efficiency of labor and operations became high but this did not always mean a lower cost per ton because items of general expense could not be reduced in proportion to the cut in production.

Mineral Prices.—Price ranges of a few of the metals during the first ten months of the year were as follows: Silver ranged between 25 and 30 cents per ounce but made a temporary spurt to over 35 cents in November over the prospect of increased use for silver as coinage after the gold standard was suspended by some of the European nations. Copper fell from 10 cents per pound in January to 7 cents in September and October. Lead held around 4 cents and zinc between 3.4 and 4 cents per pound. Aluminum was pegged at 23.3 cents per pound and tin had a narrow range

between 23 and 26 cents. Quicksilver was about \$100 per flask of 76 pounds in January and \$72 in October. Platinum dipped to a low of \$25 per ounce in May but was stabilized at \$40 from July on. Basic pig iron was quoted around \$17 per long ton in January but held very close to \$15.50 from June to November. The foregoing prices for some of the metals were the lowest on record. The best that could be said at the end of the year was that the general feeling prevailed that the bottom had been reached.

Ore Shipments.—Shipments of iron ores from Lake Superior by water totaled 23,047,192 long tons up to the first day of November as compared with 44,595,294 tons for the same period in 1930. This is around 35 per cent of the corresponding shipments in the record year of 1929.

Steel plant operations which were down to 40 per cent of capacity in 1930 dropped to below 28 per cent in the early fall of 1931 but rose to around 31 per cent early in November.

Copper.—In the case of lead and zinc the producers had the situation well in hand having curtailed production to the point where stocks of metal were being reduced but in the case of copper that point had not been reached. Although American mines all curtailed and several suspended production, stocks of refined copper reached the highest point in history and were still gaining. The serious factor is the new big copper

MINING AND ORE DRESSING

mines in Africa where Roan Antelope has already started production and others are in line to follow. Primary copper produced in the United States in September, 1931 was only 38,088 tons against 94,902 tons in April, 1929. This copper costs around 9.7 cents per pound without any allowance for depletion. If the price of copper remains at 7 cents per pound what will happen to most American copper mines is perfectly obvious. A conference of copper producers of the world was held at New York in November for the purpose of reducing the production allotments of 1930 below consumption and thus halting the increase in stocks and turning it into a decrease as had been done for lead and zinc.

Coal and Oil.—Coal mining continued to suffer from competition of petroleum and natural gas. Stocks of oil above ground were reduced but the biggest supply on record had been developed by drilling.

Gold was the one bright spot in mining as its stable price and ready market with low cost of labor and supplies always makes it attractive in a time of depression.

Labor Factors.—Labor suffered from the depression, unemployment increased and wages fell. Men were seeking work and no strikes were recorded except a few local affairs in the coal mines. Wage cuts were about 10 per cent on an average although in the Lake Superior native copper mines the reduction was considerably more. It was estimated that about 5,000 men were employed in 1931 in the mines and smelters of Utah against 12,000 in 1929. Managers made every effort to ameliorate conditions, and fine cooperation existed between employer and employee. Married men were given preference over single men. As many men as possible were employed by the stagger system and the part-time method of five or four or even less days per week. Rents of company houses were reduced or sometimes given free, and store credit extended to men with families. This was good

business to keep the organization intact as well as humane because it was futile for a man out of work in one camp to move his family to another where conditions were just as bad or worse. Many men in western gold districts turned to individual working of placers, as in the old days, and thus recovered enough gold to live on. In a somewhat similar way an organization in the Tri-State zinc district gave employment to many men on individual leases where they gouged out ore from old mines.

Industrial Setback.—Incentive for prospecting and development of new ore bodies was lacking, and construction of new plants was mainly confined to the completion of those already begun. The most activity along this line was in Northern Rhodesia and Canada. The United States Government's program of potash exploration proved up large commercial deposits in the salt beds of Texas and New Mexico.

TECHNICAL PROGRESS

Technical progress slackened because of lack of money to make changes and improvements. Operating efficiency became high. Research and testing had to be reduced although with the full realization that it was not good policy. Some of the notable advances of the year were as follows: The deepest oil well reached 10,580 feet. With rotary drills using hard-faced bits a record of 5,410 feet in 54 hours was made in soft rock. New gasoline pipe lines totaled 3,500 miles. Different grades of oils are pumped in sequence through the same pipe line. Safety measures reduced accidents still further. Coal mines installed larger cars, bigger electric locomotives and heavier tracks. Many wooden cars were replaced by steel and storage battery locomotives gained over the trolley type. Electric pumps operated by automatic control. Natural gas became available in some districts as a cheaper power for mining and metallurgical operations. Air-

planes for freight reached a carrying capacity of three tons. Stellite facing for tools and rubber surfaces showed superiority for resisting wear. Spraying coal with calcium chloride solution prevented dusting.

INDUSTRIAL PROBLEMS IN MINING

Production Balance.—The failure of economic progress to keep pace with technical is well brought out in this time of depression. Production is very efficient but balancing it against consumption is very poorly done and nothing nearly as efficient exists in our control of distribution, sale and prices. Competition becomes keen, stocks increase, prices fall, profits turn into losses and general demoralization results. Left to itself the industry will ultimately right itself by conforming to the inexorable law of supply and demand but this is a drastic process ending only in the survival of the fittest. The weaker units of high cost producers must go to the wall and the marginal producers must suspend for a time. All this means loss of invested capital, unemployment and distress. However there are some who favor this procedure, maintaining that it results in a more vigorous industry in the end, that the country should not be taxed to support higher prices for companies which cannot prosper without such help, and that men thrown out of work will find jobs in other lines. As a specific example the old native copper mines of Lake Superior would have to be closed for a long period until such a time as the cheaper copper from other parts of the world had been exhausted and prices had risen to the point where these mines could again be worked at a profit. This seems a ruthless procedure involving a tremendous loss since the large thriving communities of the peninsula of northern Michigan would join the class of deserted ghost cities of some of the famous mining districts of the past in the west.

Proposals For Regulation.—On the other hand the more general view is that some way should be found to

avoid such a catastrophe but unfortunately no fully satisfactory plan has been evolved. If an industry has a monopoly as is the case with aluminum, it regulates itself, but if many competing producers are involved the solution is more difficult. Cartels, quotas, stabilization can succeed only where full cooperation exists and this is often difficult to obtain. In the United States the Sherman anti-trust law becomes a stumbling block, and there is the question how far combinations can go without becoming liable to prosecution for restraint of trade. The removal of this law from the statute books or a liberal interpretation of it to allow reasonable combinations has been advocated. Instead of control by the industry itself those who always look to the government in an emergency hold that the government should now step in with an investigating commission and regulate the industrial ills in mining. This leads to the setting up of another government machine with a big staff and expense and adds to the government in business of which there is already too much. An extreme example of this was the use of military control of oil production in 1931 by the governors of Texas and Oklahoma to force curtailment until a rise in price resulted. Another group sees prosperity restored if the government will only put on protective tariffs to raise prices.

Machines vs. Men.—Closely connected with the economics of mining is the problem of the men whose labor is displaced by the work of machines. Unless new lines of industry can be developed for these men or production quickened, the only logical solution of this problem is shorter hours per man to keep them all employed. This virtually passes along to the men all the advantages of the machine by making their daily task shorter and easier.

Question of Remedies.—Many of the remedies proposed for the present situation appear to be mere palliatives. The sound solution is for the industries to work out their own re-

COAL AND COKE

lief. Budgets must ultimately be balanced. Cooperative group research will help greatly, especially if attention is given to the development of new uses and markets for mineral products thus increasing consumption which after all is the crux of the whole situation. There is one way in which the government can give real aid and that is by reducing taxes which have become a very heavy burden on many mining operations.

ORE DRESSING

To report in detail the status of ore dressing and coal preparation would be to repeat almost word for word what was written a year ago. New construction was small in amount. Maximum economies were sought. Research was much curtailed. An important study of possible benefits of increased speed of ball mills is showing much promise. Flotation leads other processes and flotation of

gold ores is on the increase. Among non-metallic minerals on which this process is now applicable are manganese oxides, tungsten ores, barite, phosphate, cyanite, chromite, beryl and hematite. Simpler and more effective flotation reagent mixtures are in use. More powerful electromagnetic separators have been designed. Central milling plants are coming into the Tri-State zinc district.

COAL PREPARATION

Coal preparation continues to expand and improve and coal operators are coming to understand it better. The flotation process has at last gotten a start on coal in the United States, the initial plant being located in the Pittsburgh district. The Aersand process using the heavy solution effect of a sand bed kept alive by rising air has also reached the commercial stage of having a plant in operation.

COAL AND COKE

BY R. DAWSON HALL

EDITOR, *Coal Age*

PROGRESS IN SAFETY AND MECHANIZATION

Rock Dusting.—Progress in safety and in mechanization was the outstanding feature of the year 1931, unless, indeed, the increasing economic difficulties confronting the industry should be given first place. Much of the increased safety may be ascribed to rock dusting, which has been introduced into more and more mines and is being used more wisely and effectively in those into which it had been introduced. In the early days the dust was spread mainly in roadway headings. Necessity for its use in headings used only for ventilation and in rooms has at last been recognized and provisions made accordingly. These provisions have prevented the extension of explosions. In the Exeter mine of the Kingston-Pocahontas Coal Co., for instance, an explosion occurred kill-

ing one man and injuring another. Formerly such an explosion would have killed the other 148 men in the mine, but because of the thoroughness of the rock dusting all of them came out alive and whole.

Mine Disasters.—For over nine months, beginning Jan. 28 and ending Nov. 3, no major disaster occurred in the bituminous coal mines of this country, a record not duplicated in the years of accurate count. A major disaster is arbitrarily set as one in which five men are killed. On Nov. 3 an explosion killed five men at the mines of the Island Creek Coal Co., but with this minor break the record continued till the end of the year. Signal as are explosions, they are not as destructive of human life as other causes, such as falls of roof and coal. It is, therefore, a matter for congratulation that mechanization is decreasing the number of fatalities for

XII. MINERAL INDUSTRIES

every million tons mined, even though the record of the number killed per million man-hours worked is not so clearly defined.

Fatalities decreased also from transportation, from electricity and from explosives. Relative to the last of these, C. H. Matthews has shown that, by immersing in mine water, bronze screen plate with sheet steel or copper wires, or on the other hand coal with sheet steel or cast iron, electric currents can be generated. This fact explains many of the mysterious premature explosions of electric fuses. The mine is converted by the metals and coal in it into a great battery. There may be stray currents in mines, therefore, which do not utilize electricity for the mining processes and which are not in the track of electrical systems on the surface. During 1931, fatalities in coal mines fell to about 1,450 as against about 3,000, which was only too often the number in earlier years. The percentage decrease greatly exceeded the percentage decrease in production. During the year the National Coal Association's committee on safety was unusually active in promoting safety under the leadership of M. H. Fies.

Reducing Acidity of Mine Waters.—Observations and field experiments are demonstrating that some reduction of acidity of mine waters is possible, not so much by neutralization as by preventing the pyrite from being oxidized. The waters entering the mine are alkaline and become acid when they dissolve the products of oxidized pyrite. Thus far the effort at neutralization has been solely directed to flooding the abandoned areas, so that oxygen cannot reach them, and to discharging the water into the streams which are already acid, thus saving the smaller tributaries from pollution. These considerations suggest ways of conducting mine operations in a manner that will reduce acidity, which acidity is often as costly to the mining industry as to the industries which use the diluted effluent. How-

ever, the public will then be deprived of the germicidal effects of the acidity and of its coagulant virtues. At the Third International Conference on Bituminous Coal it developed that the neutralized waters containing, as they do, ferrous hydrate and ferric hydrate were harmful to fish and caused the growth of iron bacteria in pipes, thus clogging them. This evil also is probably not beyond correction.

BITUMINOUS COAL LOADING

In the middle of the year the U. S. Bureau of Mines reported that the loading of bituminous coal by mechanical methods, commonly known as "mechanization", though only a small part of that already effected, in 1930 increased 23.7 per cent to 46,824,000 tons. This did not include about 20,000,000 tons loaded by stripping, which method is mechanization *par excellence*. In all, 14.9 per cent of the bituminous production is loaded by mechanical methods. A coal saw has been developed for cutting solid blocks out of the coal face. C. Gottschalk, Big Vein Coal Co., has devised a crane for transferring his mine cars from one track to another, so that the loading machine can be presented with cars from a side track without the delay involved in switching cars. Germany is using power scrapers for backfilling mine areas as the coal is excavated.

MINE AIRING

J. F. MacWilliams, Pennsylvania Coal & Coke Corporation, has introduced vanes in his mine fans to reduce turbulence. The blades in a fan drive all the air to the casing so that the large air space between the blade tips and the casing is filled with air currents having no definite direction. By taking off the air delivered by the blades when furthest from the point of ultimate discharge in a passage nearest the casing, and the other air delivered in other sections by successive passages more remote from the casing, the air is

delivered in a manner approaching orderliness.

COAL PREPARATION

Elastic Percussion Crusher.—Coal preparation has made much progress. No development in this art has made so great an impression in Europe as the elastic percussion crusher, which crushes the coal so as to break the different kinds of coal from a single bed into various sizes, so they can be used for the several purposes for which they are best suited,—byproduct coking, low-temperature carbonization, pulverized-coal burning and the like. American coal experts differ as to the value of this development to this country. The collapse of low-temperature carbonization in America has made questionable the advantage of any attempts to segregate coal suited for that purpose, unless such separation would make that form of carbonization far more feasible in America than it now is.

The Salerni process recently developed in England, which in a degree resembles the K. S. G. process in Germany, is believed by some to be the solution of the low-temperature carbonization problem. Instead of raw coal being used, the crushed raw coal is mixed with crushed coke from the process and with fuel oil. It is said that the product is hard, nonfriable and dense, but the experiments, though performed under conditions simulating those which would be used in making a commercial product, have involved only small quantities of coal coked in a small unit. The Old Ben Coal Corporation is packaging a quick-burning coal, by coating lumps of coal with paraffin wax, to be used for the ignition of raw coal, and for other purposes.

Sand Flotation.—To return to the more elemental stages of coal preparation, it may be recorded that sand flotation has found a successful foothold at one of the mines in the high-volatile bituminous field, the Covedale plant, of the Pittsburgh Ter-

minal Coal Co. Hitherto it has been used only for the cleaning of anthracite and low-volatile bituminous coal. This system uses a suspension of sand in water as separating medium, but a suspension of sand in air has been introduced at one high-volatile coal plant,—the mines of the Allegheny River Mining Co.,—and will soon be introduced at another located at Mogg, Ky. This is a new system and has never been used in cleaning other types of coals. The plant under construction will clean the coal from several mines under separate ownership,—another innovation, at least in America.

Methane Removal.—Something more than a suggestion has been made that the methane generated in abandoned anthracite mine workings be isolated, removed, compressed and transported to metal refining plants in the vicinity of the mines.

BITUMINOUS COAL PRODUCTION

The production of bituminous coal during 1931 was remarkably steady. The usual variation of intensity of operation between winter and summer was greatly reduced. Tonnage declined 19 per cent from that of 1930, itself a year of low tonnage. Several suggestions for improving the situation have been proposed, but the only definite action was one taken on Dec. 3, when at a meeting called at New York City committees were appointed to promote the organization of sale agencies or mergers in the various coal districts. Some radical suggestions have been made, such as that the governors of the coal-mining states should reach an agreement as to quotas, seize the mines and restrict the tonnage to the quantity specified. Reports show that the bituminous coal output for the year was about 378,110,000 tons. To duplicate this small production, one must go back to 1909 when the output was 379,744,257 tons. In 1918 it was 579,386,000 tons. The production of anthracite in 1931 was about 59,531,000 tons and in the previous year 69,385,000.

XII. MINERAL INDUSTRIES

PETROLEUM

By ERNEST R. LILLEY

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CONSUMPTION AND EXPORTS

Market Factors.—In a year of world industrial and political chaos, the report of the oil industry of the United States that the domestic consumption of motor fuels in 1931 was approximately 403,000,000 barrels, 5,000,000 barrels more than in 1930 and 22,000,000 more than in 1929, would indicate that the industry had been more than fortunate. However, though the domestic gasoline market is by far the most important of the individual factors determining the prosperity of the American oil industry, it is by no means the only phase, and without exception, the reports from the other phases were far from satisfactory. After rising steadily for ten years to reach a peak of 65,600,000 barrels in 1930, motor fuel exports dropped about 30%. While part of this astonishing reversal in trend may be attributed to depressed conditions in foreign markets, the major part must be ascribed to further substitution of Venezuelan gasoline for the product from United States refineries, increasing exports from Russia, and the flood of low priced Roumanian gasoline that came upon the European market after the collapse of a production restriction agreement in that country.

Sales.—Sales of kerosene, both for the domestic and foreign markets, declined materially, the rate of decline in both cases being substantially greater than the normal slow declines in the sale of this product. Sales of wax in the domestic market rose somewhat, but those to foreign buyers declined sufficiently to neutralize this increase. Domestic sales of automobile lubricants were approximately the same as in 1930, but very substantial declines in the gallonage for export and to domestic industrial consumers reduced the total sales by more than 10%.

Consumption Decline.—While fully comprehensive figures are not

available, it would appear that the consumption of gas and fuel oils declined by approximately 10%. The ratio of decline was by no means equal in all markets and in all types of consumers. The decline in export and bunker fuel sales was especially marked because of stagnancy in those markets and because of increasing use of foreign oils. Railroad consumption naturally reflected the serious falling off of freight movement. Domestic consumption seems to have increased slightly. Decreasing industrial activity led to reduction in consumption of fuel oils by individual plants. However, the extremely low prices for fuel oil prevailing throughout the entire year led to the substitution of fuel oil for coal in many plants, so that the actual decline of sales to this type of consumer was not large.

PRODUCTION

Volume and Capacity Control.—The final estimate of production in the United States during 1930, as prepared by the Bureau of Mines, was 898,000,000 barrels. Despite the fact that this represented a decline of more than a hundred million barrels from 1929, a further decline was registered in 1931, the total being approximately 853,000,000 barrels. During January and February, production was kept at a level of 2,100,000 barrels a day through proration agreements covering practically all of the major producing areas in the country. Despite full realization of the artificial nature of the control exercised over the productive capacity of such pools as Oklahoma City, Yates and Van in Texas, and Elwood and Kettleman Hills in California, it was generally felt that the production side of the oil business was in fairly stable condition.

Effect of New Wells.—No great concern had been felt because of the discovery of oil in a rank wildcat test at a depth of 3,500 feet in the Cre-

taceous in northwest Rusk County, Texas, on the east flank of the East Texas syncline in October, 1930. The almost simultaneous completion in January, 1931, of three widely separated wells of 10,000 to 20,000 barrels daily capacity in this area came as a rude shock to an industry that was beginning to assure itself that all sources of flush production were under control. As the drilling campaign initiated after the completion of these wells resulted in the bringing in of well after well of similar capacity without showing any limits to the extent of the pool, the industry began to realize that this pool was entirely different from those that had been discovered in the sections nearest to it. By June, it was realized that the pool would cover an area of approximately 120,000 acres, and that its potential yield was far in excess of anything that the industry of the country could absorb. Frantic efforts were made to bring it under some form of drilling restriction and production control. However, fully half of the acreage was in small parcels controlled by individual and small companies to whom restriction of production held no attractions. The collapse of prices was inevitable, as gushers followed one another in rapid succession and oil was literally thrown on the market for whatever price it would bring. The strategic position of the pool close to large refining centers and main pipeline and railroad routes, made its production felt in every producing center of the country.

Disorganization of the Industry.—By the early part of July, the whole of the industry was so completely disorganized that Oklahoma 36° A. P. I. gravity crude oil was quoted at 18 cents a barrel, or approximately one-fifth of the price at the opening of the year. Production at this time in East Texas was in the neighborhood of 400,000 barrels a day, a large amount, but a quantity of flush oil no greater than had been absorbed by the oil industry a number of times previously. Here, however, conditions were different. The drilling campaign was barely under way, and the size

of the wells and the low cost of drilling were such as to indicate that it would only be a matter of time before cheap East Texas crude would force practically all of older producing areas in the Mid-Continent and Gulf areas to shut down completely.

Texas Situation.—The market was strengthened temporarily on the fourth of August by the action of Governor Murray of Oklahoma in declaring martial law and closing down the great flush producing areas of Oklahoma City and Seminole. However, the rising yield of East Texas was more than capable of replacing the oil shut off by this move and threatened to undo its effects in a few weeks. Finally, late in August, with authority granted by an act of a special session of the state legislature, passed largely because of the disastrous effects of low oil prices upon the finances of the state, Governor Sterling of Texas placed the East Texas area under martial law and closed in all wells preparatory to formulating a system of production control. The area was reopened Sept. 11 under a proration agreement through which its yield was restricted to 400,000 barrels a day. A month later, the flush pools of Oklahoma were allowed to produce under similar restriction agreements. At the close of the year, the number of completed wells in East Texas was nearly 4,000, with many wells drilling and a large number of proved sites still remaining to be drilled. All of the larger pools in the country were operating under some form of proration agreement, the total production of the country being maintained at a level of approximately 2,400,000 barrels daily.

IMPORTS AND FOREIGN COMPETITION

Substantial declines in imports of crude petroleum, refined gasoline, and gas and fuel oils were recorded during the year. While the chief sources of normal supply—Venezuela, Mexico, Colombia, and Peru—showed decreases in production, this was not due to inability to produce. The low prices prevailing in the United States

XII. MINERAL INDUSTRIES

materially reduced the margin of profit obtainable in that market, and as all of the larger producers in these countries had access to this cheap oil, it was logical to curtail operations in the Latin-American areas. Some effort was made to ship increased amounts of Venezuelan oils to Europe and other foreign markets, but the success was no greater than that of American refiners who found that the complete demoralization of the Roumanian industry and forced sales by the Russians in their efforts to secure gold for exchange made such markets unprofitable. Thus, while imports of foreign oils were decreasing, competition was increasingly felt by the American refiner in what had been some of his most profitable export markets.

OIL STOCKS AND PRICES

On Jan. 1, 1931, stocks of all oils equalled 665,870,000 barrels, a total somewhat lower than that of the high point of 1929. During 1931, a reduction of approximately 55,000,000 barrels was made. As the slight decreases in stocks of kerosene, lubricants, and motor fuels served only to balance the increases in stocks of other products, the whole of the de-

cline in stocks may be ascribed to reduction in the quantity of crude oil in storage. Under more normal circumstances, this drastic reduction would have been accompanied by a marked increase in the prices of crude oil and its products. However, as much of the reduction was due to forced sales by companies in desperate need of cash and as an even larger amount could be traced to the artificial restriction of production by proration agreements and even by martial law, prices responded only slightly. Prices of crude oil and all products declined steadily from the end of February until the middle of the year, when most products were quoted at levels below those of any period since the industry came into existence. With United States motor gasoline selling at refineries in Oklahoma at slightly more than two cents a gallon and crude oil at prices below lifting costs in nearly every section of the country, a rebound was inevitable. Prices began to rise although the movement was somewhat erratic because of the artificial factors involved bringing levels at the close of the year to a point where they were only slightly below those quoted at the beginning of the year.

IRON AND STEEL

By EDWIN T. CONE

ASSOCIATE EDITOR, *The Iron Age*

GENERAL

A review of the American steel industry for 1931 is by no means cheerful reading. But this is true of most other industries here and abroad. Comparisons are said to be odious but they are often forceful. A salient fact is that, compared with the last major depression, that in 1921, pig iron and steel output as well as prices of steel products, were in excess last year of those ten years ago.

DOMESTIC PRODUCTION

Decline in Rate.—After a seasonal increase in production in the

first quarter of 1931, a gradual decline set in until, with the exception of a slight rise in November, the rate of production of steel ingots, the usual measuring stick, fell to about 21 per cent of rated capacity. The decrease in pig iron was equally drastic. Prices on Dec. 29, as measured by the composite averages of *The Iron Age*, were at the lowest point of the year but none of them, except scrap, as low as in 1921.

Pig Iron and Steel Output.—Taking pig iron and steel production for the year, actual data are not available for some time but conserva-

IRON AND STEEL

tive estimates place the pig iron total at 18,500,000 gross tons and the steel at 25,700,000 tons. How these compare with some previous years is shown by the following table:

	Pig Iron	Steel
1931.....	18,500,000*	25,700,000*
1930.....	31,750,000	40,700,000
1929.....	42,610,000	56,430,000
1921.....	16,690,000	19,780,000
1913.....	30,970,000	31,300,000

* Estimated.

Thus pig iron output last year at about 18,500,000 tons was about 41 per cent under that for 1930 but nearly 11 per cent in excess of that for 1921. Steel last year at 25,700,000 tons, including castings, was down about 36.5 per cent from 1930 and about 30 per cent in excess of that of 1921. Both pig iron and steel last year are under those for 1913 by a considerable margin.

PRICES

Averages.—Reviewing the price situation, the best picture is given by a comparison of average composite prices, as published by *The Iron Age*. The low averages for a number of years are given in the following table for pig iron, finished steel and steel scrap:

	Pig Iron	Steel†	Scrap
1931.....	\$14.79*	2.052	\$ 8.50*
1930.....	15.90	2.121	11.25
1929.....	18.21	2.362	14.08
1921.....	19.11	2.107	

* Per gross ton on Dec. 29.

† Cents per pound on Dec. 29.

It is rather surprising to note that in pig iron and steel, and probably in scrap, the 1931 average composites are under those for 1921 and of course below those for 1930. Scrap ended the year at the lowest level in its history.

WORLD PRODUCTION

Some interesting data are available on the world production of pig iron and steel, as published in the Annual Review Number of *The Iron Age*. With estimates for the last month or two for 1931, the output of pig iron for all producing countries, about 24 in all, was about 55,-

730,000 gross tons. This is a decrease of 30 per cent from the 1930 total of 79,400,000 tons but 50 per cent larger than the 1921 total of 37,680,000 tons. Estimated steel output for all countries was 69,150,000 tons which is a decrease of about 26 per cent from the 93,330,000 tons for 1930. Compared with the total of 43,510,000 tons for the same countries in 1921, the 1931 increase was about 59 per cent.

METALLURGY

Rustless Steels.—In metallurgy during 1931, there were a number of developments of importance. Outstanding among these was the rapidly expanding use of the rustless steels in industry. These include the high chromium and the high chromium-nickel or 18 and 8 steels. Their use in architecture, particularly in the Empire State Building (supplementing the application on the Chrysler Building in 1930), is a prominent achievement. Industry's use of these rustless steels has centered in three lines: Acid, oil and automobile. In the nitric acid industry large quantities of a high chromium steel are being used for towers in which the synthetic acid is made. In the oil industry, tubes and other equipment of the 18 and 8 type are used successfully for high temperature oil-cracking. In the automobile industry several companies have adopted these steels for use as trimming for certain bright metal parts.

Copper as Steel Alloy.—Publication of the results of research last year indicate the possible use on a large scale of copper as an alloy in steels. Its application has been confined almost entirely to the low copper-bearing steels containing about 0.25 per cent copper. There are strong indications that higher percentages can be advantageously used. The fact that copper is a cheap alloying metal is also in its favor.

Low-Alloy Steels.—Last year the introduction of several low-alloy steels gained added impetus. These average only small amounts of the alloying metals, which bestow on the steels properties superior to those of

XII. MINERAL INDUSTRIES

plain carbon steels containing no alloys. A prominent example of this class of steel is one offered under the name "Cromansil." It contains about 0.50 per cent chromium, 1.25 per cent manganese and about 0.75 per cent silicon. Another is a low-nickel alloy steel. Besides these there is the low vanadium steels and a low molybdenum type. Some of these can be used in the as-rolled condition or without any heat treatment and their higher tensile strength rec-

ommend them as weight-saving materials of value.

Silicon-manganese Refining.—Another development last year was the further study of the refining of open-hearth steel by the use of silicon-manganese alloys. The use of an alloy, containing manganese and silicon in the proportion of about five to one has been found to purify steel by the formation of a silicate of low fusibility which easily floats out of the steel, reducing oxidation.

COPPER

By SCOTT TURNER

DIRECTOR, UNITED STATES BUREAU OF MINES

INDUSTRIAL FACTORS AND OUT-LOOK

In 1931, increased severity of world industrial depression intensified unfavorable trends that had characterized the copper industry in the previous year. Drastic curtailment of production failed to compensate for even more pronounced decline in consumption. The continued increase of world stocks of copper that resulted was reflected in a moderate lowering of price during the first four months of the year, after which the price-descent became more rapid until 7 cents a pound was reached in September; approximately that price still prevailed in the middle of November when this summary was written. Meanwhile, continued development of the ore reserves and production capacity of Central Africa and Canada created so much alarm as to the future outlook that high-cost American producers are advocating a tariff on copper imports to the United States. The chief copper producers of the world held a conference at New York to consider further curtailment of production.

COPPER PRODUCTION AND RESERVES

World Output.—World smelter production for the first 9 months of 1931 indicated a probable total of

about 1,500,000 tons for the year, a decrease of about 17 per cent from the production of 1,807,000 tons in 1930 and 30 per cent less than in 1929 when the record production of 2,136,000 tons was made. In September, the daily rate of world production had fallen to 4,023 tons.

Domestic Curtailment.—Mines of the United States contributed most heavily to curtailment of world production, the output having been reduced from a daily rate of 1,886 tons of copper in September, 1930, to that of 1,270 tons in September, 1931, a decline of about 33 per cent; the total decline in United States production since September, 1929, amounts to 52 per cent. The domestic-mine production of September was also less than a third of world-smelter production in the same month, though for the year 1929 domestic production furnished practically half of world production.

Chile and Peru.—Smelter production of Chile and Peru increased slightly during the first 9 months of 1931, from that of the corresponding period in 1930, being 217,914 tons in comparison with 209,386 tons. Production from this source, however, had been reduced 32 per cent in 1930 from a total of 307,410 tons in 1929. The rate of smelter production from these countries in September, 1931,

COPPER

was about 23,000 tons a month, compared with about 31,000 tons a month in September, 1929.

CANADIAN COPPER PRODUCTION

Aggregate Output.—During the first 7 months of 1931, Canadian mine production of copper was 86,500 tons compared with 91,845 tons for the corresponding period of the previous year. For July, 1931, the monthly rate of Canadian production was 11,838 tons. The sources by provinces of Canadian copper production and the character of its expansion is indicated by the following table:

Province	1925*	1929†	1930†
Ontario.....	19,859	44,440	63,859
British Columbia.	34,611	51,952	46,659
Quebec.....	1,255	27,668	40,155
Manitoba.....	.....	.....	1,044
Yukon.....	.....	.....	21
Total.....	55,725	124,060	151,738

* Mineral Production of Canada, Canadian Bureau of Mines, 1926.

† Mineral Production of Canada, Canadian Bureau of Mines, 1930.

International Nickel Company.—

In 1930, the International Nickel Company produced 2,041,801 tons of ore yielding approximately 133,000 tons of matte. Copper sales in 1930 were reported as amounting to 109,743,747 pounds. Curtailments in 1931 reduced production contemplated for the near future to a rate of about 100,000 tons a month. The new concentrator at Sudbury commenced operation in August, 1930; this had been preceded in July by completion of the new Copper Cliff smelter of the same company. Proven ore reserves of that company as of Dec. 31, 1930, were reported to be 206,704,000 tons.

British Columbia.—The Granby Company, operating in British Columbia, closed the Allenby concentrator at Copper Mountain because of construction of a concentrator at Anyox having a daily capacity of 4,800 tons. Reserves at the end of 1930 were reported as 14,601,149 tons, about two-thirds of which are in the Allenby mine, the remainder being at Anyox. The Allenby reserves average 1.34 per cent copper, those of Anyox about 1.14 per cent copper.

The Howe Sound Company produced from British Columbia 23,499,608 pounds of copper during the first 9 months of 1931, compared with 33,523,918 pounds in 1930.

Noranda.—The yearly capacity of Noranda has been raised to 35,000 tons of blister copper through installation of a second reverberatory furnace and additional converters.

Manitoba.—The Flin Flon mill in Manitoba demonstrated a capacity of 3,000 tons a day in recent runs. The Sherritt Gordon mill was completed in 1931; its concentrates go to the Hudson Bay (Flin Flon) smelter.

Refinery Capacity.—Completion of the new electrolytic copper refinery of the Ontario Refining Company, which will treat copper of International Nickel and of Granby, provides Canada with three refineries having an annual capacity in excess of 200,000 tons of copper. It will be apparent that the copper production of International Nickel is of chief weight in Canada with respect to the problem of over-production.

COPPER PRODUCTION IN AFRICA

Katanga.—The heart of the African copper production situation lies in Union Minière du Haut Katanga, which thus far has provided the only important tonnage from Africa, that of Northern Rhodesia being as yet prospective except with respect to Roan Antelope which has recently commenced production. In 1930, Katanga produced 2,603,000 metric tons of ore, averaging nearly 6 per cent, from which 139,000 metric tons of copper was derived. This represented a moderate increase in ore-tonnage from that of the previous year, nearly compensated by decrease in grade. Hence, the production of refined copper in 1930 was only slightly greater than that of 1929. The maximum monthly production of Katanga during 1930 indicates a maximum present productive capacity of less than 170,000 metric tons of copper per annum, approximately equivalent to 185,000 short tons. Near the end of 1930, this company agreed to curtail production and through the first half of 1931 was producing at a

XII. MINERAL INDUSTRIES

rate of 10,400 metric tons of copper a month. Substantially that rate has continued until now when consideration is being given to further reduction. In June, 1931, the first consignment of Katanga copper was shipped over the new railroad to Lobito Bay, Portuguese West Africa. This route will effect a reduction in the cost of Katanga copper through the saving of 3,000 miles in its shipment to Europe. Reserves of Union Minière at the end of 1930 were estimated at about 86,000,000 tons of 6.41 per cent ore.

Roan Antelope, the first of the new great mines of Northern Rhodesia to attain production, completed the first unit of its concentrator during the third quarter of 1931. The

results of operations during this quarter were as follows:

	Tons milled, short tons	Average grade, per cent	Concentrates produced, short tons	Average grade of concentrates, per cent
July.....	75,500	3.71	3,645	58.45
Aug.....	109,600	3.59	4,790	59.16
Sept.....	153,000	3.27	6,660	55.75
	338,100	3.50	15,095	57.44

The indicated rate of production of copper metal by Roan Antelope is about 30,000 tons a year.

Reserves.—All of the copper mines of Northern Rhodesia will pay a royalty to the British South Africa Company, the latest report of which contains the following official estimate of reserves of these deposits.

	Partly Oxidized	Per Cent Copper	Sulphide	Per Cent Copper	Total	Per Cent Copper
Roan Antelope.....	Not stated	.....	108,000,000	3.4	108,000,000	3.4
N'Kana.....	7,000,000	3.0	93,000,000	4.0	100,000,000	3.9
Mufulira.....	Not stated	.....	102,000,000	4.4	102,000,000	4.4
Chambishi.....	Not stated	.....	24,000,000	3.7	24,000,000	3.7
N'Changa.....	64,000,000	3.8	None	.....	64,000,000	3.8
R.C.B.C. (Chingola)...	30,000,000	6.6	Not stated	.....	30,000,000	6.6
Baluba.....	Not stated	.....	21,000,000	3.5	21,000,000	3.5
	101,000,000	4.6	348,000,000	3.9	449,000,000	4.0

The total copper content indicated above is about 18,000,000 short tons, equivalent to world requirements for about a decade at rates of consumption that recently prevailed.

Rhokana Corporation.—In the past year the Rhodesian Congo Border Concession consolidated with other companies in a new organization called the Rhokana Corporation, Ltd., which controls N'Kana concession and mine, N'Changa and N'Changa West mines and Chingola; in addition the corporation is a large shareholder of the Mufulira Copper Mines, Ltd. The new company plans to operate a concentrator with an initial capacity of 7,000 tons a day, to be increased ultimately to a capacity of 10,000 tons. Mufulira Copper Mines, Ltd., controls Chambishi and Baluba as well as the Mufulira mines. The company plans to operate a 5,000-ton

concentrator upon production from these mines.

WORLD CONSUMPTION AND STOCKS

Following consumption by the world in 1928 of more than 1,900,000 tons of copper and of nearly 2,000,000 tons in 1929, world consumption declined in 1930 to approximately 1,613,000 tons. Apparent world consumption for the first 9 months of 1931 was about 1,042,000 tons, at which rate the consumption of the present year would be considerably less than 1,400,000 tons. It is believed, however, that recently consumption has declined to approximately 100,000 tons a month, a rate of 1,200,000 tons a year. This drop in consumption has been so pronounced that decline in world production has not kept pace. Accordingly, world stocks of 331,774 tons at the end of

GOLD AND SILVER

1928 had increased to more than 700,000 tons by the end of September, 1931. During the third quarter of the year, stocks were increasing at a rate of about 22,000 tons a month.

CONFERENCE OF COPPER PRODUCERS

The problem before the conference of copper producers, held in New York, involves as factors a world consumption of about 100,000 tons a month with production more than 20,000 tons in excess of this, in spite of the existence of approximately 6 months supply in the form of accumulated stocks. It is recognized that excessive stocks inevitably result in unreasonably low prices. Therefore, a reduction of the monthly rate of copper output to 80,000 tons has been proposed for consideration, as this would reduce stocks at the rate of about 20,000 tons a month. The arrangement of such a program involves many difficulties, however, among which may be mentioned a combined total of nearly 20,000 tons produced by such countries as Germany,

France, Russia, and Japan, whose production is likely to remain uncontrolled. This would leave only about 60,000 tons a month for production by the world's largest producers, and many of them could not curtail their production much further without serious detriment. Katanga, for example, is exceedingly reluctant to decrease production to a point where native labor, which has been recruited and educated for mine work at great expense, would become scattered and possibly unavailable for future needs. It has been pointed out that the Belgian government, though a principal stockholder of Katanga, is more deeply concerned with the development of the resources of the Congo than in obtaining immediate profits from mines of the Congo. There is also some natural reluctance of low-cost producers to assist in maintaining, through drastic curtailment of present production, high-cost production that will subsequently protract the period of recovery from high stocks and low prices.

GOLD AND SILVER

By CHARLES W. HENDERSON

MINERAL GEOGRAPHER, U. S. BUREAU OF MINES

PRODUCTION

World production of gold from 1493 through 1927 has been 1,003,560,000 fine ounces and approximately 20,000,000 ounces each for 1928, 1929, and 1930; for 1931 the gold production increased to 21,000,000 ounces. World production of silver from 1493 through 1927 has been 14,357,000,000 fine ounces. World production averaged 250,000,000 ounces annually for 1928, 1929, and 1930, but dropped to about 200,000,000 ounces in 1931.

United States.—Gold production in the United States from 1792 through 1931 has been about \$4,600,000,000. The highest yearly production was \$101,036,000 in 1915. It has remained between \$52,000,000 and \$44,000,000 annually during the

period 1920-1931. It was \$48,907,000 in 1931. Silver production in the United States from 1801 through 1927 has been approximately 2,996,000,000 ounces. Production for 1928-1930 has averaged 56,000,000 ounces; production for 1931 was 30,967,618 ounces.

CONSUMPTION

Manufactures and the Arts.—The Director of the U. S. Mint in his annual report for the year ended June 30, 1931, reports that gold consumption in the industrial arts during 1929 and 1930 is estimated at \$56,903,667 and \$42,689,379, respectively; for silver so used, 42,359,082 ounces and 36,343,207 ounces respectively. He gives the world's indus-

XII. MINERAL INDUSTRIES

trial consumption for gold as \$90,-170,941 in 1929 and \$80,422,730 in 1930; silver, 59,544,280 ounces in 1929 and 83,084,632 ounces in 1930.

Monetary Stock.—The Director of the Mint also reports the location and ownership of United States money as of June 30, 1931.

LOCATION AND OWNERSHIP OF UNITED STATES MONEY, JUNE 30, 1931

Kind of Money	Money Held in the Treasury	Money Outside of the Treasury	Total
Gold coin and bullion.....	\$3,696,078,869 ¹	\$1,259,842,230	\$4,955,921,099
Standard silver dollars.....	498,497,281 ²	41,461,046	539,958,327
Subsidiary silver.....	5,692,865	302,926,500	308,619,365
Minor coin.....	4,607,053	122,279,980	126,887,033
United States notes.....	3,523,480	343,157,536	346,681,016
Federal reserve notes.....	1,402,130	2,100,176,320	2,101,578,450
Federal reserve bank notes.....	42,487	2,931,475	2,973,962
National bank notes.....	17,890,685	679,113,761	697,004,446
Total.....	\$4,227,734,850	\$4,851,888,848	\$9,079,623,698

¹ Of this, \$1,701,514,389 is amount held in trust against \$1,701,514,389 of gold certificates.

² Against these standard dollars are issued \$493,349,026 of silver certificates and \$1,239,750 of Treasury notes of 1890.

NOTE.—Gold certificates are secured dollar for dollar by gold held in the Treasury for their redemption; silver certificates are secured dollar for dollar by standard silver dollars held in the Treasury for their redemption; United States notes are secured by a gold reserve of \$156,039,088 held in the Treasury. This reserve fund may also be used for the redemption of treasury notes of 1890, which are also secured dollar for dollar by standard silver dollars held in the Treasury; these notes are being cancelled and retired on receipt. Federal reserve notes are obligations of the United States and a first lien on all the assets of the issuing Federal reserve bank. Federal reserve notes are secured by the deposit with Federal reserve agents of a like amount of gold or of gold and such discounted or purchased paper as is eligible under the terms of the Federal reserve act. Federal reserve banks must maintain a gold reserve of at least 40 per cent, including the gold redemption fund which must be deposited with the United States Treasurer, against Federal reserve notes in actual circulation. Lawful money has been deposited with the Treasurer of the United States for retirement of all outstanding Federal reserve bank notes. National bank notes are secured by United States bonds except where lawful money has been deposited with the Treasurer of the United States for their retirement. A 5 per cent fund is also maintained in lawful money with the Treasurer of the United States for the redemption of National bank notes secured by Government bonds.

AVERAGE PRICES OF METALS AND CONTENT OF COINS

Gold.—A troy ounce of gold (480 grains) is fixed by law at a value of \$20.671834625323. A \$20 gold piece weighs 516 grains, of which 90 per cent—464.4 grains—is pure gold.

Silver.—A silver dollar contains 412.5 grains, of which 90 per cent—371.25 grains—is pure silver. In coining silver one ounce is valued at \$1.292929. The average commercial ratio of silver to gold, with gold considered as of legal monetary value, was 53.38 to 1 in 1930. The New York market price for silver during the fiscal year ended June 30, 1931, averaged \$0.31879; the highest monthly average was \$0.36632 in September, 1930; the lowest, \$0.27085 in February, 1931; the price in June, 1931, was \$0.27562. The lowest price

in 1931 in New York was \$0.2575 in February, 1931.

UNITED STATES MINING OPERATIONS

Total Output.—Gold production in 1931 was \$48,907,100; silver 30,967,618 ounces (from the Director of the Mint and U. S. Bureau of Mines estimate). The total for the important gold- and silver-producing states being \$44,880,000 in gold and 29,195,000 ounces of silver, according to the western field offices of the U. S. Bureau of Mines (U. S. Geological Survey and the Governor's report are used for Alaska).

Alaska.—Placer and lode mines in 1931 produced \$9,342,000 in gold, as compared with \$8,476,000 in 1930. According to preliminary estimates, the production of gold in 1931 was almost evenly divided between lode

GOLD AND SILVER

and placer mines. The bulk of the lode gold continued to come from southeastern Alaska, especially from the property of the Alaska Juneau Gold Mining Co. in the Juneau district. The second largest gold producer in southeastern Alaska is the Chichagof Mines, northwest of Sitka. Resumption of mining on Craigie Creek in the Willow Creek district brought that district into second place among the lode districts of the Territory. The Fairbanks district was third in output of lode gold. The value of the gold recovered from Alaska placers in 1931 is estimated at \$4,706,000, or about \$130,000 less than in 1930. By far the largest quantity of placer gold came from the Yukon district, with Seward Peninsula region second. The largest production in the Yukon district was made by the dredges of the Fairbanks Exploration Co. and the largest in the Seward Peninsula by the dredges of the Hammon Consolidated Gold Fields at Nome. Of all the placer gold produced in the Territory, 79 per cent was by dredging. There were 27 dredges in operation in 1931, as in 1930. No notable new finds of placer ground were made during the year.

Arizona in 1931 yielded \$2,554,000 in gold as compared with \$3,514,000 in 1930. This decrease was due chiefly to the pronounced curtailment in the output of copper ore, which annually yields the bulk of the Arizona gold output. An unusually large decrease was made in the production of gold from the United Verde mine, and decreases were also recorded from the Calumet & Arizona, Morenci property of the Phelps Dodge Corporation, Magma, and United Verde Extension properties. A large increase, however, was recorded from the Tom Reed mine at Oatman in Mohave County. The silver output was 3,157,000 ounces in 1931, compared with 5,540,732 in 1930. This decrease also was caused by the decreased output of copper ores. The United Verde copper mine was idle after May 20, and its silver production dropped from first to fourth

place. The Magma mine at Superior was the leading producer of silver in Arizona in 1931; it was followed by the Calumet & Arizona, Copper Queen Branch, United Verde, United Verde Extension, Bunker Hill, and World's Fair properties.

California.—Placer and lode mines in 1931 yielded \$10,708,000, as compared with \$9,451,162 in 1930. Gold from lode mines increased, with practically all of the larger gold mines showing a gain in output. Increased activity in the placer dredging field in Sacramento County offset the declining yield of the dredges in Yuba County; these two counties embrace the remaining important gold-dredging fields of the State. Three gold-bearing quartz mines on the Mother Lode, in Amador County, and three in the Grass Valley-Nevada City region, combined, produced 40 per cent of the state gold output. In these areas, gold is being found at increasing depths. The present development and exploration work on the Empire Star are on the 2,700 and 4,200-foot levels. The Argonaut, at Jackson, continued to extend a winze from the 5,800-foot level to 6,200 feet. The Kennedy mine is opened by a 4,650-foot vertical shaft and a 4,800-foot incline shaft. The output of silver in California was 836,000 ounces compared with 1,622,803 ounces in 1930. The three quartz gold mines in Amador County—the Argonaut, Kennedy, and Central Eureka—and the three in the Grass Valley-Nevada City region—the Empire State, Idaho, Maryland, and Murchie—yielded approximately 17 per cent of the 1931 silver output. The remainder of the silver came from the Kelly Rand silver mine, San Bernardino County, from silver-lead ores from Inyo County, and from copper mines in Plumas County.

Colorado in 1931 yielded, in terms of recovered and recoverable content \$4,766,000 in gold, as compared with \$4,516,000 in 1930. The sulphotelluride ores of Cripple Creek yielded \$2,395,000, as compared with \$2,532,000 in 1930. The Golden Cycle mill, at Colorado Springs, handled

XII. MINERAL INDUSTRIES

all the ore mined in the Cripple Creek district, about 280,000 tons of crude and dump ores. This mill also handled 10,000 tons of gold ores from other Colorado districts. The London, American, and Orphan Boy mines in Park County yielded \$770,000, making that county second in gold production in the State. The third gold-producing county was San Juan, from the output of copper-silver-gold concentrates of the Shenandoah-Dives 500-ton concentration mill, treating ore from the Mayflower group. Gilpin County was fourth with \$329,000 in gold from the Chain O' Mines, Pittsburg, and Saratoga. Lessees on the famous Camp Bird mine in Ouray County produced \$200,000 in gold and lessees on the Ibex, Tribune, and Venir mines at Leadville produced \$129,000. The Little Mattie and the Lincoln mines at Idaho Springs were the principal contributors to the \$77,000 produced in Clear Creek County. Silver production was 2,075,000 ounces, as compared with 4,291,000 ounces in 1930. The largest producing County was Eagle, with 1,395,000 ounces, mainly from iron-copper-silver fluxing ore shipped to Utah smelters. The next largest county was San Juan, with 414,000 ounces contained in the concentrates from the Shenandoah-Dives mill. Mines in all other silver-producing counties were either idle all year or operated only part of the year. Lake County (Leadville) produced only 90,000 ounces as compared to 615,000 ounces in 1930.

Idaho, never a large producer of gold, decreased its output of gold from \$443,309 in 1930 to about \$373,000 in 1931. Important producing gold mines were the Gold Hill & Iowa at Quartzburg (mine and mill buildings destroyed in a forest fire on Aug. 20), the Idawa property at Placerville, Sherman Howe mine, at Burgdorf, and three dredges in Boise County and one in Owyhee County. Silver production in Idaho decreased from 9,420,639 ounces in 1930 to 7,325,000 ounces in 1931. The Couer d'Alene district produced at least 6,950,000 ounces of the silver, chiefly

from the Sunshine, Bunker Hill & Sullivan, Hecla, and Morning Star. The Crescent, Page, Hall-Interstate, Golconda, Whitedelf, Blackhawk, Dayrock, and Sherman mines were also large producers. The Sunshine property, east of Kellogg, increased slightly its silver output over the high record established in 1930, and was again the leading producer in the State, and ranked second in the United States. The State was again the second largest silver-producing state, following Utah.

Montana in 1931 yielded about \$875,600 in gold, compared with \$899,001 in 1930. Decreases of output of some of the chief gold producers of 1930 were balanced in 1931 by increases from the I. B. Mining Co., near Bannack, the August mine near Landusky, and the Ohio-Keating mine near Radersburg. The largest gold producers in Montana were the Anaconda Copper Co. mines at Butte, Spring Hill (though closed in August), I. B., August, Liberty Montana, and Ohio-Keating. Silver production was 3,920,000 ounces as compared with 7,052,889 ounces in 1930. The decrease in the silver output was due to the fact that several of the large producers of lead-zinc ore, siliceous ore, and copper ore, which had closed late in 1930, remained idle throughout 1931. Most of the silver produced in Montana is recovered from copper ore from the properties of the Anaconda Copper Co., which cut its copper output only slightly below that of 1930.

Nevada mines yielded \$2,935,400 of gold in 1931, as compared with \$3,081,436 in 1930. The principal producing gold mines and companies were the Nevada Consolidated Copper Co., Elgoro Mines Co., Bradshaw (Inc.) on Goldfield tailings, Gold Hill Development Co., Consolidated Copper Mines Corp., Nevada Porphyry, Seven Troughs, and Duplex. Silver production was 2,496,000 ounces as compared with 4,219,832 ounces in 1930. The Tonopah district produced only 650,000 ounces, as compared with 1,931,194 ounces in

ZINC

1930. The Tybo property of the Treadwell Yukon Co. was the largest producer of silver in the State, followed by the output of the Pioche district from the mines of the Bristol Silver Mines Co. and the Combined Metals Reduction Co. Other important silver producers were the Elkoro mine at Jarbidge and the Nevada Consolidated Copper Co., and Consolidated Copper Mines Corp., at Ely. The Cortez and Betty O'Neal mines, formerly large silver producers, were not operated in 1931.

New Mexico in 1931 yielded \$666,000 in gold as compared with \$669,156 in 1930. Zinc-lead-copper-silver-gold ore of the Pecos mine in San Miguel County, the copper-silver-gold siliceous ore of the Lordsburg district, and copper concentrates from the Chino Copper mines, yielded the bulk of the gold from New Mexico in 1931. Silver production in 1931 was 1,042,000 ounces, as compared with 1,107,000 ounces in 1930. The lead-silver concentrates of the Pecos, Black Hawk, and Peru flotation mills, treating complex zinc-lead ores, yielded the bulk of the silver.

South Dakota in 1931 yielded \$8,848,000 in gold and 109,000 ounces of silver, compared with \$8,814,008 in gold and 105,236 ounces of silver in 1930. Practically all of the 1931 output was from the Homestake mine, at Lead, the largest producing gold mine in the United States.

South Dakota from the year of discovery, 1875 to 1931, inclusive, has produced \$298,071,731 in gold, and 7,879,000 ounces of silver.

Utah in 1931 yielded \$3,812,100 in gold, compared with \$4,309,148 in 1930. As in recent years, virtually all the gold was recovered from ores and concentrates smelted. The largest producers of gold were the Utah Copper, Eureka Standard, United States Smelting, North Lily, Niagara, Mammoth, Utah-Delaware, Yankee (American Smelting & Refining Co.), Eureka Lilly, Bluestone Lime & Quartzite, Chief Consolidated, Park Utah Consolidated, and Tintic Standard properties. The silver yield in 1931 was 7,894,483 ounces as compared with 13,129,421 ounces in 1930. The decrease of about 5,200,000 ounces was almost equally divided between the Bingham, Tintic, and Park City regions. The Tintic Standard Mining Co. was the largest producer of silver in Utah in 1931; it was followed closely by the Silver King Coalition Mines Co. and the United States Smelting, Refining & Mining Co. Next in order came Utah Copper, Eureka Standard, Plutus, Niagara, Park City Consolidated, Park Utah Consolidated, Mammoth, Bluestone Lime & Quartzite, Chief Consolidated, and North Lily. Other large producers were the Bingham Prospect, Utah Apex, Utah-Delaware, Tintic Lead (Horn Silver), and Bullion Coalition.

ZINC

BY WALTER RENTON INGALLS

CONSULTING ENGINEER, NEW YORK

DOMESTIC CONDITIONS

Production and Consumption.—

The zinc industry in 1931, in common with all other metals, suffered from diminished consumption reflecting especially the contraction in building into which all metals chiefly enter. These phenomena were worldwide. In the United States at the beginning of 1931 there was a stock of 143,600 short

tons and the rate of production was about 32,500 tons per month, which was about in balance with the then rate of consumption. As consumption contracted production was reduced also, indeed a little more sharply, with the result that at the end of October the stock had been reduced to about 130,000 tons and production and consumption were about in balance

XII. MINERAL INDUSTRIES

at the rate of about 21,500 tons per month. Production in the first six months was about 173,000 tons.

Price.—At the beginning of 1931 the price for spelter was $4\frac{1}{8}$ cts. St. Louis; at the end of October 3.15. This is practically all that need be said in respect to this disastrous year.

Operation.—The constraint of reducing operations to a scale of only 40% naturally produced serious problems for both miners and smelters. Wages were generally reduced by about 10% and administrative personnels were curtailed. Operations at the mines were caused to survive in a crippled way by the selection of richer ore, the postponement of plant upkeep, etc. Among the smelting works, the metallurgists, spurred by exigency, effected improvements in practice substantially reducing costs and preserving some margin in the more efficient plants.

FOREIGN CONDITIONS

Production and Stock.—Outside of the United States the conditions were similar. The stock of spelter in first hands at the beginning of 1931 was about 215,000 short tons. In the first six months production was 453,000 tons and at the end of that period the stock was 238,000. During July the producers met at Ostend and out of desperation succeeded in forming a cartel, with the objective of prorating and curtailing production. This measure, which became effective Aug. 1, brought the rate of production down to about 63,000 tons per month, compared with 81,500 tons in January, and there was some reduction in the accumulated stock.

Price.—The price for spelter at London at the beginning of 1931 was £13 $\frac{1}{4}$ and at the end of October was

£13 $\frac{1}{8}$. In comparing these figures allowance must be made for the depreciation in value of sterling from \$4.86 to about \$3.80.

Suspension at Mines.—The Flin Flon district of Manitoba was the only new producer of spelter to come in during 1931. On the other hand Rhodesia Broken Hill was constrained to suspend. There were many suspensions among mines and metallurgical works elsewhere. The consumption of spelter in 1931 does not appear to have been curtailed in Europe as much as happened in the United States. The British trade in galvanized goods with the Orient was, however, drastically diminished.

World Consumption and Stock.

—In proportion to the normal rate of world's consumption, say 600,000 tons in the United States and 1,000,000 tons elsewhere, the accumulated stocks in first hands, viz., about 130,000 and 220,000 tons respectively, do not appear to be unwieldy, being rather less than equivalent to normal requirements for three months.

METALLURGICAL DEVELOPMENTS

Roasting and Sintering.—The outstanding metallurgical developments of 1931 were the successful introduction of improved methods of roasting and of sintering, and the firm establishment of the new process of continuous distilling in large vertical retorts.

Zinc Oxide and Lithopone.—The business in zinc oxide and lithopone contracted largely in 1931, but owing to the more temperate competitive conditions in those substances the prices for them did not suffer as much as the price for spelter.

LEAD

By ALLISON BUTTS

ASSOCIATE PROFESSOR, LEHIGH UNIVERSITY

GENERAL

In 1931 the lead industry was severely affected. It is no doubt true that lead still occupies a relatively

strong position as compared with other metals, but the present difficulties are such that little comfort can be gained from such a statement. The price declined 23 per cent during 1931, world production fell about 18 per cent, and United States production fell about 28 per cent. Consumption declined even more, resulting in a considerable increase in stocks during the year.

WORLD PRODUCTION

Tonnage Decline.—The falling-off in the world's production of lead was, in view of general conditions, rather moderate; and it followed only a small decline in the previous year, resulting in a total production of close to 1,500,000 short tons of refined lead. This represents a loss of only 22 per cent from the peak production of 1929. It exceeds slightly the output of 1924, but is below all subsequent years. Only a few years ago, therefore, this tonnage would have been regarded as excellent. The difference is that now it is further below production capacity, and especially that it was above consumptive demand and had to be sold at low prices. The total production of lead is sometimes below, sometimes above that of copper. In recent years it has usually been below, and it has never reached the record production of copper in 1929. Indications are that in 1931, however, the output of lead considerably exceeded that of copper.

Output by Countries.—Preliminary reports of production in the individual countries in 1931, as published by the American Bureau of Metal Statistics, show that, as was the case in 1930, there was a relatively greater decline in lead output in the United States than in any of the other producing countries. The United States' share of the total world tonnage was 36 per cent in 1929; in 1931 it was only about 29 per cent. Some attribute this decline in large measure to a growing scarcity of lead in the United States. It is difficult to say whether consumptive demand in the United States also declined more than it did in

other countries in 1931. Probably there was better cooperation among producers, causing the production to be curtailed more in proportion to lessened demand; but it is evident that such curtailment was not carried far enough, as is probably always the case in times of weakening demand for metals. The United States production in 1931 was about 430,000 short tons. Mexico was again the next largest producer, with about 250,000 tons, a decline of only about 7 per cent from 1930. Australia produced about 150,000 tons; Canada about 135,000 tons; Germany about 115,000 tons; Spain and Tunis together about 95,000 tons; Burma about 85,000 tons; and all others combined about 240,000 tons. All of these figures are lower than the corresponding ones for 1930.

STOCKS AND PRICES

Stocks of lead at smelters and refineries in the United States totaled 104,000 short tons at the beginning of the year. These increased rapidly in the first few months, remained about stationary for a time in the middle of the year, and again rose in the latter half. On Nov. 1, 1931, they amounted to 211,000 tons. The average price of lead at New York in 1929 was 6.83 cents per pound. In 1930 it was 5.52 cents. In 1931 it was 4.42 cents. The price at the end of 1930 was approximately 5.1 cents per pound, and at the end of 1931 approximately 3.9 cents per pound. The decline was not uniform, rather sharp drops taking place in January, June, and September. In April and May there was a rise amounting to 0.5 cent per pound. The price of lead was higher than that of zinc throughout the year.

LEAD CONSUMPTION

Changes have been taking place in the principal sources of demand for lead. Prior to 1925 the largest use of lead was for paints and pigments (chiefly white lead, but including also red lead and litharge). In 1924 this use accounted for 23 per cent of the total in the United States. In 1925, storage batteries became the largest

XII. MINERAL INDUSTRIES

source of lead consumption, closely followed, however, by cable covering. The latter also passed paints and pigments in 1926. This order continued until 1930, when cable covering also passed storage batteries. In per cent of total consumption, the figures for 1928 were: storage batteries, 23.6 per cent; cable covering, 19.3 per cent; paints and pigments, 16.5 per cent. In 1930 the figures were: cable covering, 25.9 per cent; storage batteries, 21.6 per cent; paints and pigments, 15.3 per cent. These figures are compiled by the American Bureau of Metal Statistics. For 1931 the complete figures are not yet available, but it is evident that another change in source of demand occurred, tending to restore paints and pigments to their former high position, while the use for storage batteries slumped. The paint industry apparently took considerably more lead than the storage battery industry in 1931, and possibly took more than cable covering. These figures reflect the falling-off in automobile production, and perhaps indicate a relatively better position for the building industry in 1931. In addition to paints used in connection with building, the building industry has for many years taken an additional 10 per cent of the total lead consumption, used for lead pipe, corrosion-proof ornamental work, and many other purposes. For

a few years storage batteries figured largely in the radio industry, but this factor has become small with the advent of the "all-electric" receivers.

METALLURGICAL PROGRESS

The principal investigations reported during the past year have to do with properties of certain alloys. J. G. Thompson (*Bur. Standards J. Research* 5, 1085-1107, 1930) gives data on the tensile strength, hardness, and solidification characteristics of lead-bismuth, lead-tin, and type-metal alloys, as well as of the fusible alloys of lead, bismuth, tin, and cadmium. S. J. Nightingale (Brit. Non-Ferrous Metals Research Assoc. Develop. Rept.) reports on alloys found superior for lead pipe. These contain 0.25 per cent cadmium, 0.5 per cent antimony, balance lead, or 0.25 per cent cadmium, 1.5 per cent tin, balance lead. They show 80 per cent increase in tensile strength as compared with pure lead, 3 to 4 times the fatigue limit, and greater resistance to corrosion. They do not show intercrystalline corrosion. M. Werner (*Z. Metallkunde* 22, 342-6, 1930) finds that addition of small amounts of other elements to lead improves the corrosion-resistance only when a passive layer is formed on the lead. The best corrosion-resisting lead is that least contaminated with oxygen.

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

(For further information, the reader may address the following organizations)

AMERICAN ASSN. OF PETROLEUM GEOLOGISTS, Box 1852, Tulsa, Okla.	AMERICAN IRON AND STEEL INSTITUTE, 75 West Street, New York City.
AMERICAN GAS ASSN., 420 Lexington Ave., New York City.	AMERICAN MINING CONGRESS, 841 Munsey Bldg., Washington, D. C.
AMERICAN INSTITUTE OF MINING & METALLURGICAL ENGINEERING, 29 W. 39th Street, New York City.	AMERICAN PETROLEUM INSTITUTE, 250 Park Avenue, New York City.
	AMERICAN ZINC INSTITUTE, 27 Cedar Street, New York City.

DIVISION XIII

MANUFACTURES AND TRANSPORTATION

GENERAL CONDITIONS IN MANUFACTURING

By L. SETH SCHNITMAN

CHIEF STATISTICIAN, F. W. DODGE CORPORATION

INTRODUCTORY

American industry and commerce in 1931 were subjected to further retrenchment before the phalanx attack of economic forces. On the whole, to carry the metaphor somewhat further, the battle was fought on many fronts but at no time during the year did the armed forces of drafted artificial media do more than only temporarily arrest the wedge-like drives of the regular economic fundamentals. Generals Farm Board, Public Construction, High Tariffs, Wage Maintenance, Foreign Debt Moratorium, National Credit Corporation; these were some of the commanding officers of the die-hard forces which could do little to stem the incessant attacks under such leaders as Economic Maladjustment, Bond Defaults, Real Estate Foreclosures, Banking Insolvencies, Commercial Failures, Technologic Unemployment. As the year drew to a close it was singularly and painfully evident that the economic forces were definitely to win and that, only after the unconditional surrender of the anti-deflationists, whenever that might come, could American industry courageously envision a better outlook.

PRODUCTION VOLUME

Manufacturing.—The physical volume of manufacturing output during the year 1931 registered a decline of approximately 17 per cent from 1930, which itself was almost 20 per cent lower than the boom year 1929. Manufacturing production in 1931, to

put the results in still another way, was only 80 per cent of the average annual production during the three-year period 1923-1925, inclusive. One must go back to the depression year 1921 to find a lower index of manufacturing output than that recorded for the year just ended; the 1931 index was about 20 per cent above that reported for 1921 but was materially lower than the indexes shown for either 1919 or 1920.

Mining.—The volume of mining production during 1931 showed a loss of almost 20 per cent from 1930 which itself was 14 per cent behind the peak level of 1929. Mining output during the year just ended was only 82 per cent of the average annual volume during the three-year period 1923-1925, inclusive. The quantitative index for mining production during the year 1931 was 17 per cent above the depression level of 1921 and though showing a decline from 1920 was higher than the index registered for 1919.

Total Industrial Output.—Combining the indexes of manufacturing production and mining output the resultant index for the total volume of industrial production for 1931 showed a loss of about 18 per cent from 1930 and was only 80 per cent of the annual average for the three-year period 1923-1925, inclusive. This combined index of the physical volume of industrial production for 1931 was approximately 20 per cent above the depression low of 1921 but was

materially lower than the indexes registered for either 1919 or 1920.

MANUFACTURING CLASSIFICATIONS

Automobiles.—Production in 1931 showed a loss of 35 per cent from 1930, the index for 1931 standing at only about 40 per cent of the index of 1929. The 1931 index of automobile output was materially higher than that shown for 1921, but was only 55 per cent as large as that recorded as an average for the three years, 1923-1925, inclusive.

Iron and Steel.—The index of iron and steel production for 1931 was 38 per cent below 1930 and was only 46 per cent as large as that recorded for the boom year 1929. This index, too, maintained itself above the depression level of 1921 but was substantially lower than for either 1919 or 1920; in fact, the 1931 index was only 59 per cent of the annual average for the three-year period, 1923-1925.

Non-ferrous Metals.—The production of non-ferrous metals in 1931 declined approximately 30 per cent from the preceding year and showed a loss of about 45 per cent from 1929. In this case the 1931 index was 69 per cent of the average for the three years from 1923 to 1925 and was 77 per cent above the 1921 depression level.

Textiles.—Singularly, the textile industry was the only major industrial group to show a quantitative production volume larger in 1931 than in 1930, even though for the closing months of the year losses were shown from the corresponding period of the previous year. It was because the index of textile production during the major portion of 1931 was running higher than during the corresponding months of 1930 that many observers reached the conclusion that a turn for the better in business generally was occurring. This conclusion was reached because such a condition heralded the business revival in 1921. Prosperity still depends, however, upon the production of wealth or capital goods and not so much upon the output of goods which are quickly

consumable unless such production is maintained for a sufficiently long time to require more capital facilities. In this very important respect conditions in 1931 were fundamentally different from those which prevailed ten years earlier. The gain in textile output in 1931 as contrasted with 1930 amounted to something more than 4 per cent, but with the exception of 1930 one must go back to 1924 to find a lower level of textile production than was registered during the year just ended.

Leather and Shoes.—The index of production of leather and shoes for 1931 showed only a fractional decline from 1930. Here again the rise in production which manifested itself during the early months of 1931 misled observers into the belief that business generally was grooming itself for a genuine revival.

Other Classifications.—Even the tobacco manufacturing industry which had come to be considered as a depression-proof industry further extended its decline in 1931. Tobacco manufacturing, petroleum refining and paper and printing, of the remaining important industrial classifications, though declining from 1930, were able to maintain their production schedules at or above their respective annual averages for the three years, 1923-1925, inclusive. For petroleum refining and paper and printing it is probable that the relatively high levels of production during 1931, in the face of disturbed economic conditions generally, have likely aggravated the already unwieldy inventory positions of these industries, making more clouded their present outlook.

SUMMARY OF MANUFACTURES: 1849 TO 1931

Year	In Thousands		In Millions	
	Number of Establishments	Wage Earners (Average Number)	Wages	Value of Products
1849...	123	957	\$ 237	\$ 1,019
1859...	140	1,311	379	1,886
1869...	252	2,054	620	3,386

GENERAL CONDITIONS IN MANUFACTURING

Year	In Thousands		In Millions	
	Number of Establishments	Wage Earners (Average Number)	Wages	Value of Products
1879...	254	2,733	\$ 948	\$ 5,370
1889...	355	4,252	1,891	9,372
1899...	512	5,306	2,321	13,000
1904...	216	5,468	2,610	14,794
1909...	268	6,615	3,427	20,672
1914...	273	7,024	4,068	24,217
1919...	214	8,997	10,460	62,000
1921...	196	6,944	8,200	43,619
1923...	196	8,777	11,008	60,530
1925...	187	8,382	10,727	62,668
1927...	192	8,350	10,849	62,718
1929...	207	8,743	11,422	69,418
1931...	180	6,500	7,500	40,000

Above data are from U. S. Department of Commerce, Bureau of Census, except that figures shown for 1931 represent estimates by the author.

MANUFACTURING CENSUS ANALYSIS

Decrease in Plants.—A full year will elapse before official data on the Census of Manufactures for 1931 will be available. However, using such current information as was at hand the estimates given in the above table were compiled to provide a comparison for 1931 with earlier census years on the more significant items—number of establishments, number of wage earners, total wage payments and value of products. If the above estimates for 1931 are approximately correct, then we find that 1931 showed a smaller number of manufacturing establishments than was reported during any censal year since 1859 essentially indicative of the industrial integration and consolidation that has taken place, though, of course, economic conditions which have lately prevailed have operated to force many manufacturers out of business. Consolidations brought growing pains and particularly so for such as were undertaken in 1928 and 1929, since for the most part they were undertaken at exorbitant valuations and under top-heavy capital structures.

Factory Workers and Wages.—The estimated number of factory wage earners in 1931 was lower than for any censal year since 1904; this

of course reflects economic as well as technologic changes in employment especially as respects the period between 1929 and 1931. Factory wage payments, as estimated, for 1931 were lower than in an censal year since 1914 while one must also go back to 1914 to find a manufacturing output valued lower than that estimated for 1931.

Industrial earnings as based upon reports from a representative number of companies in 1931 were only about 45 per cent as large as in 1930 and only about 30 per cent of what they were in 1929. At the same time the aggregate decline in total dividend payments by industrial corporations in 1931 from 1930 was less than 10 per cent. Many corporations disbursed dividends that were not earned, and in not a few instances this condition operated to weaken their cash positions at a time when commercial credit was becoming more difficult to obtain and when bond flotations were next to impossible.

Foreign Commerce.—Our foreign trade suffered terrific losses in 1931; in fact both exports and imports were thrown back to levels which obtained before the world war. This loss in foreign commerce was largely superinduced by the chaotic political and economic conditions that obtained throughout the world to say nothing of the Nationalism, which seems to have gripped every nation on the face of the globe not even excepting America.

BUILDING CONSTRUCTION

Value.—Based upon data of F. W. Dodge Corporation new construction of all descriptions undertaken during the year 1931 showed an approximate total of \$4,000,000,000. This was more than 30 per cent behind the total for 1930 which itself was 21 per cent lower than that reported for the year 1929. Unlike other business measures 1928 marked the peak year for the construction industry and in contrast the 1931 total, measured in dollars, was only about 44 per cent as large as that reported for 1928.

Volume.—It is this large retrench-

ment in construction expenditures which has in no small degree precipitated the general contraction in industry and business generally. The loss in construction volume between 1930 and 1931, however, is not quite so large as the dollar figures indicate; this is so because of rather drastic declines that have occurred in construction costs. None the less the recession in construction activity which has now been in evidence for three solid years has had telling effect upon our economic well-being. When one considers that this single industry at peak levels provided direct and indirect employment to perhaps 5,000,000 persons, any such retrenchment as has occurred is a serious upsetting influence upon our economic scheme.

Public Works.—During 1930 and more especially 1931 valiant efforts were put forward by governmental agencies looking toward the extension of public works construction programs on a scale never before undertaken, in order to provide a mitigant for the unemployment which economic and technologic conditions had forced. It may now be said with certainty that these governmental efforts, though praise-worthy, have spent their force and are now in effect somewhat of a boomerang. Governmental construction obviously implies the expenditure of public money. Whether these moneys are raised by immediate taxes or by bonds, which in essence are deferred taxes, the burden ultimately rests upon the public. Unfortunately, bonds whether issued under private or governmental authorities have a way of maturing, and real estate for the most part still bears the larger burden under our existing tax structures.

Real Estate Burdens.—Such large expenditures as have been undertaken by municipal, county, state, and Federal authorities for the extension and construction of public work has necessarily operated to place an even heavier burden upon an already onerous real estate situation. Thus 1931 was characterized by general advances in real estate tax rates throughout

the country by various and sundry direct and devious means, and this despite the fact that actual real estate values were not immune to the deflation which characterized our general business structure. It is this condition which has operated as an important limiting factor upon new building undertaken by private funds and may likely continue to operate in this direction particularly since many municipalities during 1931 have experienced greater difficulty in collecting real estate taxes than perhaps during any other year in a generation. Quite naturally there are limits to the taxing powers of our states and municipalities. Even the Federal government, which derives its revenues principally on earned incomes, under our present system of taxation, came face to face with the problem of balancing its budgets during 1931. Balancing of the Federal budget now appears virtually impossible over the next two or three years without large increase in the national debt. To burden land with taxes for public improvements, however meritorious, for which no present reasonable economic need exists, seems to offer an obstacle, though by no means the only one, in the way of early restoration of large new private building activity.

Building Materials.—The recession in new building which was further extended in 1931 operated materially to curtail the production schedules of manufacturers of building materials. Thus the production and consumption of cement, despite large use in governmentally-inspired projects showed a sizeable loss from 1930. The production and distribution of enameled sanitary ware likewise suffered because of the recession in new building. The takings of structural steel recorded a sizeable loss from 1930 while the production of lumber was probably thrown back by economic forces and the fuller effects of competitive materials to a lower level than at any time since 1889. The output of clay products—brick, tile, terra cotta, and the like—also partook of the drastic retrenchment which building conditions forced.

ECONOMIC REFLECTIONS

The mere ringing in of the New Year, 1931, was expected, miraculously, to dissipate the long continued economic disorder without further dispelling its fundamental causes. Many observers forgot the simple truth that the calendar is only a convenient instrument to measure the march of time and that the split-second which marked the calendar change from 1930 to 1931 could hardly produce a restoration of economic balance out of the deep chaos that had existed just a moment before. The crop of optimistic forecasts at the 1930 year-end was far from customary proportions, but the almost continuous flow of hopeful prattle throughout 1931 from high governmental quarters, fundamental conditions notwithstanding, amply made up for the deficiency in the private crop. In spite of the cheering the nation descended to an economic despond, deeper, perhaps, than at any time in our entire history. If 1930 had dislodged the new era philosophy which, in essence, was that wealth could be created without labor, then it remained for the year 1931 to teach business once and for all that confidence and optimism, always salutary, are as but ripples upon a sea of economic torrents.

Unfortunately, however, as 1932 peeped through, evidences were plentiful that some of our false prophets were again busy providing cheer and hope to a nation sorely tried by their earlier outpourings. If hope is needed for 1932 and beyond, it is the hope that business will have learned to disregard the grandstand and modestly play its own game according to the inexorable rules of economics. It is not that the nation's business and industry have been so paralyzed or have suffered lesions from which there can be no recovery; rather is it that the toxins of economic disorder of the years since the World War are rapidly assuming the importance of anti-toxins which in the future should insure against similar cataclysms. If the current depression has done

nothing more than teach American business that inflation ultimately means deflation and that the cure for inflation is deflation and not more inflation then the nation will once again be ready to march to higher planes of prosperity when the debris has been cleared away. If we will not learn this simple truth then may we expect to see further recurrences of the cycle of pauper and prince, famine and feast. Such recurrences, when they come, will be even more drastic, than this one from which we will surely emerge, for now America has attained adolescence.

Far more significant than the depression, which, in causes and effects, is transitory, is the implication of declining population growth. From the standpoint of the barest necessities of life—food, clothing, and shelter—the effects on our economy should be at once apparent. The industries which have supplied these necessities have formed important items in the balance sheet of American business. Carry this implication through to the industries that have provided the comforts and luxuries of life and at once the magnitude of the problem which lies ahead for business, after it has unshackled itself from the forces of depression, appears in its true light. This problem is in no wise alarming if American business and industrial leaders will recognize its significance and gear their instrumentalities for its implications. The problem is no less real, however, than the problem of technologic unemployment, the solution of which, at the moment, seems to rest essentially on the extension of leisure and the shortening of the work week.

All in all the year 1931 will rank in importance with the few most significant single years of our economic annals. It was in 1931 that American business and industry began to regain consciousness after a self-inflicted and long-protracted stupor. Future historians will probably record 1932 as the year of return to economic consciousness, the

XIII. MANUFACTURES AND TRANSPORTATION

year when industry recognized that in our national life which have arisen it was at the cross-roads and when it out of the striking change in population began to gird itself for the new forces growth.

ADMINISTRATION OF THE TARIFF

By J. D. NEVIUS

BUREAU OF CUSTOMS, TREASURY DEPARTMENT

THE BUREAU OF CUSTOMS

Function.—The function of the Bureau of Customs is to administer the tariff law, to decide questions submitted by the Collectors of Customs and to issue necessary instructions for the enforcement of all the laws relating to customs. In addition to these duties the Customs Service assists in the work of other departments and activities, such as the collection and accounting for head tax, fines, and other receipts for the Public Health Service; the enforcement of plant and animal quarantine, pure food, motor boat, and other laws; and the disbursement of funds at various points for the Coast Guard, Public Health Service, and the Supervising Architect.

Organization.—The above tasks require an organization of approximately 10,000 officers and employes, distributed throughout 48 customs districts. These districts contain ap-

proximately three hundred ports of entry, one port in each district being designated as the headquarters port, at which port the Collector of Customs is stationed.

AIRPORTS OF ENTRY

Foreign Entries.—In addition to the three hundred ports of entry there have been established under the Air Commerce Act of 1926 nine permanent airports of entry and thirty-two temporary airports of entry. All aircraft arriving from a foreign country are required to land at either a permanent or a temporary airport of entry and report to the customs officer at that place. During the last fiscal year 6,708 airplanes entered the United States. These planes carried 20,907 passengers.

Permanent Airports.—The following are the permanent airports of entry as of September 30, 1931:

<i>Location</i>	<i>Name</i>	<i>Date Designated</i>
Ajo, Arizona	Municipal Airport	Nov. 15, 1929
Albany, New York	Municipal Field	Sept. 28, 1928
Brownsville, Texas	Municipal Airport	Jan. 8, 1930
Buffalo, New York	Municipal Airport	June 10, 1929
Detroit, Michigan	Wayne County Airport	Feb. 10, 1931
Key West, Florida	Meacham Field	Dec. 20, 1927
Miami, Florida	Pan-American Field (or 36th St.)	Oct. 16, 1928
Seattle, Washington	Boeing Municipal Air Field	Sept. 11, 1928
Seattle, Washington	Lake Union	Dec. 27, 1928

Temporary Airports.—The following list shows the temporary airports of entry as of September 30, 1931 (continued p. 457):

<i>Location</i>	<i>Name</i>	<i>Date Designated</i>
Akron, Ohio	Municipal Airport	Apr. 8, 1929
Bellingham, Wash.	Graham Airport	Apr. 18, 1931
Calais, Maine	Pan-American Airways Seaplane Base, St. Croix River	July 23, 1931
Derby, Vermont	Canadian Gateway Airport	Aug. 1, 1929

ADMINISTRATION OF THE TARIFF

<i>Location</i>	<i>Name</i>	<i>Date Designated</i>
Detroit, Michigan	Detroit Municipal Airport	June 19, 1931
Detroit, Michigan	Ford Airport	Aug. 1, 1929
Douglas, Arizona	Douglas Airport	Jan. 8, 1930
Duluth, Minnesota	Municipal Airport	Sept. 4, 1931
Duluth, Minnesota	Duluth Boat Club Seaplane Base	Sept. 4, 1931
Eagle Pass, Texas	Eagle Pass Airport	Mar. 5, 1930
El Paso, Texas	Municipal Airport	Aug. 15, 1929
Great Falls, Montana	Great Falls Municipal Airport	June 2, 1931
Havre, Montana	Havre Municipal Airport	June 2, 1931
Juneau, Alaska	Juneau Airport	June 18, 1931
Ketchikan, Alaska	Ketchikan Airport	June 18, 1931
Laredo, Texas	Laredo Airdrome	Jan. 24, 1930
Malone, New York	Malone Airport	Apr. 19, 1931
Miami, Florida	Curtiss Air Station	Apr. 22, 1931
Miami, Florida	Dinner Key Seaplane Base	Mar. 7, 1930
Nogales, Arizona	Municipal Airport	June 27, 1929
Pembina, North Dakota	Fort Pembina Airport	Feb. 2, 1931
Plattsburg, New York	Mobodo Airport	June 2, 1931
Portal, North Dakota	Portal Airport	Jan. 8, 1930
Port Angeles, Wash.	Port Angeles Airport	Jan. 8, 1930
Port Townsend, Wash.	Port Townsend Airport	June 18, 1931
San Diego, Calif.	San Diego Municipal Airport (Lindbergh Field)	Jan. 24, 1930
San Juan, Porto Rico	Isla Grande	Jan. 19, 1929
Scobey, Montana	Scobey Airport	June 2, 1931
Spokane, Washington	Spokane Municipal Airport (Felts Field)	June 2, 1931
Swanton, Vermont	Missisquoi Airport	July 18, 1931
Watertown, New York	Watertown Municipal Airport	June 2, 1931
West Palm Beach, Fla.	Roosevelt Flying Service Base (Currie Common Park)	Mar. 10, 1931

CUSTOM DUTIES COLLECTED

The customs duties collected for 1930 amounted to \$584,759,605, while for 1931 they amounted to only \$378,781,494, which shows a decline of approximately 35 per cent. This decline was due somewhat to the economic depression prevailing throughout the world, but a considerable part of it may be attributed to the fact that the Tariff Act of 1930 was passed immediately preceding the close of the fiscal year of 1930. Consequently large quantities of dutiable articles on which the rates of duty were increased were rushed in from foreign countries or withdrawn from warehouse in order to gain the benefits of the lower rates under the old Act.

BAGGAGE EXAMINATION

The work of examining the baggage of millions of passengers is necessarily a tremendous task. In order to assist both the inspector and the passenger

a booklet has been prepared furnishing travellers with information relative to the customs laws and regulations governing the declaration and entry of their baggage and effects when arriving from foreign countries. In the preparation of this booklet about 12,000 trans-Atlantic passengers were offered the opportunity of making known their views on the Customs Service, and not less than 3,200 passengers were interviewed.

CONSULAR INVOICES

For over 100 years invoices certified before a consul in a foreign country have been required for all shipments of merchandise when the value is over \$100. Under the Tariff Act of 1930 the Secretary of the Treasury was granted authority to make such exceptions as he deems expedient from the requirements for consular invoices. In accordance with this authority he has waived the requirement

XIII. MANUFACTURES AND TRANSPORTATION

with respect to certain raw materials which are free of duty or subject only to a specific rate of duty not dependent upon value.

ENTRY OF MERCHANDISE

Merchandise may be entered for consumption; for warehouse; for transportation and exportation; or for immediate transportation without appraisement. A consumption entry is the usual form and is used where it is desired to pay the duty upon arrival of the importation at the port of entry and secure delivery. If immediate possession of the merchandise is not essential and the importer desires to postpone the payment of duty, a warehouse entry may be made, in which event the merchandise is sent to a bonded warehouse and duty is not paid until withdrawal therefrom. Perishable articles and explosive substances other than fire-crackers, however, may not be entered for warehousing. In the event merchandise is sent to a bonded warehouse it may be withdrawn therefrom at any time within three years, with the exception of grain, which is allowed to remain in warehouse only for a period of ten months.

DRAWBACK

The Tariff Act of 1930 provides that upon the exportation of articles manufactured or produced in the United States with the use of imported merchandise, the full amount of the duties paid upon such merchandise so used, less 1 per cent, shall be refunded as drawback. (Sec. 313.) For the fiscal year 1931, \$12,821,000 was paid out as drawback.

PROCEDURE

When the entry is presented at the customhouse, an entry clerk examines it to determine if it is complete and properly executed. He then checks up the calculations and makes an estimate of duties to be paid, which the importer deposits. The delivery permit, stamped to indicate that the duties have been paid, is then given the importer, which, on presentation on the pier, authorizes the inspector to deliver certain packages to the im-

porter and certain other packages indicated on the permit, to the Appraiser's Stores for examination and appraisement. An examiner at the Appraiser's Stores examines the merchandise and approves the entered values or advances them if he believes them to be too low. While the determination of the rate of duty to be paid is a function of the Collector, an advisory classification of the merchandise is made at the Appraiser's Stores. If no irregularities are discovered, the importer is notified to call for his packages. If irregularities are discovered in the examination of packages, the examiner may call on the importer for the redelivery of the balance of the importation, which has been removed from the pier on the delivery permit, which redelivery the importer is bound to make under the terms of his redelivery bond, so-called. After the work at the Appraiser's Stores has been completed, the papers are returned to the Collector, where the duties owing to the Government are computed. This is known as liquidation of the entry. If the liquidated duties are less than the estimated duties which have been deposited, the difference is refunded to the importer, and if the liquidated duties are higher, the importer is called on for an additional deposit.

AWARDS AND PENALTIES

The Secretary of the Treasury is authorized by Section 619 of the Tariff Act of 1930 to pay an award to any person, other than a Government officer, who furnishes information concerning any fraud upon the customs revenue, which information leads to the recovery of duties, fines, or penalties. The amount of such award shall be 25 per cent of the net amount recovered, but in no case to exceed \$50,000. Such information is, in many instances, received from persons using fictitious names whose motive in giving the information is usually to avenge a grievance. Persons who use their real names in submitting information of customs frauds generally expect an award of compensation. A number of commercial organizations furnish original information leading

THE UNITED STATES TARIFF COMMISSION

to recoveries of large sums of money, their interest in the matter being to protect the mercantile firms whom they represent and to secure funds through awards of compensation with which to finance their operations against those practicing irregularities in their importations. During the fiscal year 1931 a total of \$328,590 was paid to informers.

THE UNITED STATES TARIFF COMMISSION

BY HENRY P. FLETCHER

CHAIRMAN, UNITED STATES TARIFF COMMISSION

ORGANIZATION AND PERSONNEL

The authority for the existence and the activities of the Tariff Commission is contained in Sections 330 to 341 of the Tariff Act of 1930. The commission consists of six members appointed by the President and confirmed by the Senate. The law provides that the President shall annually name one of the commissioners as Chairman and another as Vice Chairman. The term of office is for six years but so arranged that the term of one commissioner shall expire each year. The law further provides that not more than three commissioners shall be members of the same political party. The present members of the commission assumed office in September, 1930, at which time Henry P. Fletcher was designated as Chairman which position he held until his resignation in November, 1931. On November 24, 1931, Robert Lincoln O'Brien was appointed to succeed Chairman Fletcher. Commissioner Dixon, whose original term of one year expired in June, 1931, was given a recess appointment, Congress not being in session at the time his term expired. The law provides that the principal office of the Commission shall be in Washington, and authorizes the Commission to maintain an office in New York City. In order to facilitate the securing of cost data and other information required by law, the Commission also has an official representative in Europe with headquarters in Brussels.

DUTIES OF THE COMMISSION

Section 332 of the Tariff Act of 1930 describes the general duties of

the Tariff Commission, setting forth that the Commission shall investigate the administration and fiscal and industrial effects of customs laws, the relationship between the duties on raw materials and on finished products, study the tariff relations between the United States and foreign countries, investigate economic pacts and similar arrangements in Europe, and obtain for the information of the President and Congress all facts that will show the differences which affect competition between articles of the United States and imported articles. This section further provides that the Commission shall make such investigations and reports as may be requested by the President, by either house of Congress, by the Committee on Ways and Means, or by the Committee on Finance.

SPECIAL INVESTIGATIONS UNDER SECTION 332

Petroleum.—In addition to the general powers and duties under Section 332, this section contains a specific provision directing the Commission to investigate and report to Congress the approximate average cost of production during the three years preceding 1930 of domestic crude petroleum delivered to refineries on the Atlantic seaboard and the 1930 cost of crude petroleum from Lake Maracaibo in Venezuela delivered to the same points. This investigation has been completed and a report was transmitted to Congress on February 7, 1931. Subsequent to the receipt of this report by Congress a resolution was passed by the House of Representatives directing the Commission

XIII. MANUFACTURES AND TRANSPORTATION

to ascertain the difference between the foreign and domestic costs of production of "crude petroleum, fuel oil, gasoline and lubricating oils." In compliance with the terms of this resolution it has been necessary to obtain cost data from all of the countries which, during 1929 and 1930, shipped to the United States an aggregate of more than 2,000,000 barrels of those commodities. The report on this investigation is now nearing completion.

Fish and Other Marine Products.—A report has been made on fish and other marine products landed in the United States from the high seas and from territorial waters by aliens and by citizens. This survey was made in response to a Senate Resolution passed July 3, 1930. In the course of its investigation the Commission obtained complete information as to imports and traced the movements of whaling ships and in this way apportioned the catch on the high seas between vessels registered in foreign countries and domestic vessels. To obtain similar data on the catch of American vessels questionnaires were sent to all owners of powered vessels engaged in coastal fisheries and data obtained from them showing the nationality of the fisherman, catch of the various kinds of fish, and the source *i. e.*, in territorial waters or on the high seas. A greater territory was covered and more schedules of information were received in this investigation than in any study previously conducted by the commission.

Vegetable and Animal Oils.—In response to a Senate Resolution the Commission is studying the cost of production and transportation to the principal domestic markets of copra, whale oil and certain vegetable oils, and further in accordance with the resolution will report so far as practicable the kinds and amounts of domestic oils and fats which have been displaced in domestic industry by the importation of these commodities. This investigation has necessitated a detailed study of the sources, costs, technical characteristics, uses, etc., of these products.

Creosote Oil.—Senate Resolution No. 470 directs the Commission to conduct an investigation in the United States and in the principal competing country respecting the difference in the costs of production and delivery of creosote oil. It also requests the Commission to include in its report a statement as to the rate of duty necessary to equalize the difference in costs. In pursuance of this resolution the Commission has obtained cost and other data from 13 domestic companies operating 32 creosote oil plants. Creosote oil producers in England, the principal competing country, have cooperated with the Commission in the investigation, and cost data have been obtained from 7 companies in that country operating 10 plants.

Copper.—In response to Senate Resolution 434, the Commission instituted an investigation of copper including the ore, regulus, bars, and ingots. Cost of production data were obtained in the United States for about 40 operating mines, 30 milling operations, 18 smelters, and 11 refineries. Cost data were also obtained for the mining and further processing of copper in Canada, Mexico, Cuba, Chile, Peru, and Spain. The report to the Congress on this subject is nearing completion.

Other Reports.—There has also been completed during the year a survey on cigar wrapper tobacco which tells the history of the cigar leaf production, present sources of supply, etc. Other surveys have covered such subjects as "Labor used in producing Coal in Russia," and "Sugar Differential."

ACTIVITIES UNDER REVISED FLEXIBLE TARIFFS

Provisions.—The Tariff Act passed in June, 1930, discontinued all investigations in progress by the Commission under the provisions of Section 315 of the Tariff Act of 1922, but reenacted, with some changes, in Section 336 of the present Act the provisions of Section 315. Section 336 provides that investigations looking to changes in rates of duty, within stated limitations, to equalize differ-

THE UNITED STATES TARIFF COMMISSION

ences in foreign and domestic costs of production, may be instituted by the Commission (1) upon request of the President, (2) upon resolution of either or both houses of Congress, (3) upon its own motion, or (4) upon request of any interested party when in the judgment of the Commission there is good and sufficient reason therefor.

Production Costs.—The Commission's investigations under the provisions of Section 336 are primarily for the purpose of establishing the difference in costs of production of similar foreign and domestic articles. To this end extensive field work is carried on by a trained staff in both the United States and foreign countries. A permanent staff of research men is kept in Europe with headquarters in Brussels. By this means the Commission is in intimate contact with all the important industries in Europe. In most of its investigations the producers in foreign countries have co-operated with representatives of the Commission in obtaining reliable costs of production data. If cost data

are not readily obtainable from the records of foreign producers, the Commission may, under the law, use foreign invoice prices of imported articles as evidence of the foreign cost of production.

Scope of The Work.—Out of a total of 66 investigations instituted by the Commission under Section 336, 47 of them were in response to Congressional resolutions. The remainder were largely in response to applications from the industries affected by the present duties. Approximately 100 commodities are covered by the investigations ordered to date. Applications have been withdrawn or dismissed by the Commission to the number of about 35, representing approximately 50 commodities. About 30 applications are now pending for further consideration, representing about 35 commodities. Twenty-two reports have been completed and transmitted to the President under the provisions of Section 336. A list of these reports is given below, together with a statement of the action taken on them.

COMPLETED INVESTIGATIONS AND REPORTS SENT TO THE PRESIDENT

July, 1930, to October 31, 1931

Name of Commodity	Action Taken by the President
Pigskin leather	Duty decreased from 25% <i>ad valorem</i> to 15% <i>ad valorem</i>
Wood flour	Duty decreased from 33⅓% to 25% <i>ad valorem</i>
Woven wire fencing Galvanized before weaving Galvanized after weaving	Duty increased from 45% to 50% <i>ad valorem</i> Duty increased from 45% to 60% <i>ad valorem</i>
Maple syrup Maple sugar	Duty decreased from 5½ cents to 4 cents per lb. Duty decreased from 8 cents to 6 cents per lb.
Ultramarine blue	President approved Commission's report, which specified no change in duty
Smokers' articles	Do.
Wool floor coverings, n.s.p.f	Do.
Wool felt hats and bodies Wool felt hats	Duty decreased from 40 cents per lb. and 75% <i>ad valorem</i> and 25 cents per article to 40 cents per lb. and 55% <i>ad valorem</i> and 12½ cents per article
Wool felt hat bodies	Duty decreased from 40 cents per lb. and 75% <i>ad valorem</i> to 40 cents per lb. and 55% <i>ad valorem</i>
Hats, bonnets, and hoods of straw, etc.	Duty on sewed straw hats decreased from \$4 per dozen and 60% <i>ad valorem</i> to \$3 per dozen and 50% <i>ad valorem</i> . No change of duty on other hats of straw, etc.

XIII. MANUFACTURES AND TRANSPORTATION

Name of Commodity	Action Taken by the President
Fourdrinier wires and cylinder wires suitable for use in paper-making machines, and woven-wire cloth suitable for the manufacture of fourdrinier or cylinder wires	Duty increased from 50% to 75% <i>ad valorem</i> on wires having more than 55 meshes to the inch.
Cherries, sulphured, or in brine	Report returned by President with recommendation for further investigation. New investigation ordered.
Tomatoes prepared or preserved in any manner	Report returned by President with recommendation for further investigation. New investigation ordered.
Edible gelatin	Duty on edible gelatin valued at less than 40 cents per lb. decreased from 20% <i>ad valorem</i> and 5 cents per lb. to 12% <i>ad valorem</i> and 5 cents per lb.
Bells, chimes and carillons	Duty on bicycle, velocipede and similar small bells increased from 50% <i>ad valorem</i> to 70% <i>ad valorem</i>
Hides and skins	President approved Commission's report, which specified no change in duty
Olive oil	Duty on olive oil weighing with the immediate container less than 40 lbs. decreased from 9½ cents per lb. on contents and container to 8 cents per lb. on contents and container. No change in duty on bulk olive oil
Cheese, except of American or Cheddar and Swiss or Emmenthaler types	President approved Commission's report, which specified no change in duty
Bentwood furniture	Duty decreased from 47½% to 42½% <i>ad valorem</i>
Hemp cordage	Duty increased from 3¼ cents to 4½ cents per lb.
Iron in pigs and iron kentledge	President approved Commission's report, which specified no change in duty
Pipe organs and parts thereof For use in churches or public auditoriums where no admission is charged Others	Duty decreased from 40% to 35% <i>ad valorem</i> Duty decreased from 60% <i>ad valorem</i> to 35% <i>ad valorem</i>
Dried whole eggs, dried egg yolk, and dried egg albumen	Duty increased from 18 cents to 27 cents per lb.

UNFAIR COMPETITION AND ACTS

The Commission is authorized under Section 337 to investigate unfair methods of competition and unfair acts in the importation of articles into the United States or in their sale after importation. When the findings and recommendations of the Commission, upon its investigation of such acts, justify the President in doing so, he is authorized to exclude such articles from entry into the United States, such refusal of entry to remain in effect until otherwise ordered by the President. Several complaints have been received under this provision of law and one investigation, with respect to asbestos, has been instituted.

The hearing in this investigation is impending.

FOREIGN DISCRIMINATION

Under the provisions of Section 338 the Commission is required to ascertain, and at all times to be informed, whether any foreign country discriminates against the commerce of the United States, by imposing upon it unreasonable charges or regulations not equally imposed upon other countries; or by laws, administrative regulations, or practices in regard to customs, port charges, classifications, or other like requirements which may be to the disadvantage of the commerce of the United States in such country or in any other foreign country. The

THE EXPORT AND IMPORT BALANCE

Commission is required to report to the President with its recommendations any such discriminations which it may find to exist, and upon such findings, when confirmed by him, the President is authorized to specify and declare upon articles wholly or in part the growth or product of any such country such new and additional duties as will offset such burdens, or he may exclude from importation articles from such country. Such new or additional duties are limited, however, to not exceed 50 per cent *ad valorem*. Articles imported contrary to the provisions of this section are subject to seizure and forfeiture to the United States. The Commission keeps advised at all times regarding the points covered by this section, but it has not been necessary to apply the provisions of the section to any particular commodity or country.

CONVERSION OF RATES

The Commission has in progress a

study of the conversion of *ad valorem* rates of duty from the foreign to the domestic value basis under the provisions of Section 340. This section provides that the Commission shall determine, for articles dutiable at *ad valorem* rates of duty or where the rate is regulated by the value of the article, the rates of duty which if applied on domestic value would have yielded the same amounts of duty, based on imports during the period from July 1, 1927, to June 30, 1929, as were collectible under the rates specified in the Act as applied to foreign value. Work under this section was formally initiated in 1930 and has now been in progress for over a year. Most of the early work was centered at New York but considerable work has since been done at other ports of entry. A report on this investigation must be submitted to Congress, under the terms of the Section, not later than July 1, 1932.

THE EXPORT AND IMPORT BALANCE

By RALPH A. YOUNG

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FOREIGN TRADE EQUILIBRIUM

Most nations have either a steady excess of exports or a steady excess of imports for relatively long periods at a time. The explanation of the persistence of an export or import balance has furnished one of the problems dealt with by economic students for many years, because of the bearing such an excess may have upon international financial equilibria between nations as well as upon the financial stability of individual nations. In a world still suffering from the forced readjustment of trade flows, capital movements and international debt brought on by war, they have more than an ordinary significance today.

EXCESS OF EXPORTS

Decline In Export Trade.—Continuing world-wide recession in pro-

duction, trade and commodity prices have been reflected again in 1931 in a drastic contraction of both merchandise exports and imports of the United States. Whereas exports declined by as much as \$811,000,000 or 22% during the first nine months of 1930, during the corresponding period of 1931, they declined \$1,110,000,000 or 37%. For the first nine months of the last two years, therefore, there was an aggregate decline of \$1,927,000,000 from the peak export volume of 1929 (\$3,770,000,000) or approximately 51%.

Decline In Imports.—Imports during the first nine months of 1931 declined almost as seriously as exports, in comparison with the same period of 1929, or \$1,711,000,000 (from \$3,330,000,000). In percentage terms, the decline was approximately the same, 51%. Contrasting imports for

the like same periods of 1931 and 1930, we find a decline of \$782,000,000, as against a decline of \$929,000,000 from 1929 to 1930. Though the more recent decline was smaller in absolute dollar figures than in the preceding two years, it was a much larger percentage decline,—33% as against 28%. It is an interesting fact that no such two-year reductions in our exports or imports have occurred in the history of our foreign trade, with the exception of the declines from 1920 to 1922, which amounted to \$4,338,000,000, or 53% for exports, and \$2,630,000,000, or 50% for imports.

The Favorable Export Balance.

—Offsetting exports and imports, the balance of trade for the first nine months of 1931 was again "favorable." This "favorable" export balance, amounting to \$223,000,000, however, was \$338,000,000 less "favorable" than for the similar period of 1930. While the seasonal swings of the year's last quarter may increase it to some extent, yet it is scarcely possible that for the full year, the balance will approach that of last year, or \$902,000,000.

DEPRESSION BALANCES

Trends.—No period provokes greater speculation on the export or import balance than a period of world-wide industrial depression. The last slump of international scope, occurring in 1920 and 1921, was accompanied by a sharp decline in our export balance, and successive drops marked the years immediately following. In the severe depression preceding that,—1908—our export balance was greater during the year of sharp decline in business than in the year preceding, and then fell off considerably in the ensuing years.

Factors.—In view of the growing severity of the present depression, it is not unlikely that immediately succeeding years will again witness a declining export balance. While the rapidity with which conditions change renders prognostication hazardous, still there are a number of considerations pointing in the direction of a lower export balance. First might be mentioned the improbable early re-

covery of our foreign lending, unquestionably a factor in our maintenance of an export balance from 1922 to date. Second, increasing competition in foreign markets for our goods, arising from a variety of causes; for our agricultural products from the opening up of new foreign production areas and more intensive cultivation in other areas; for our agricultural raw material products from the development of new production areas; and for our manufactured products from general economic pressure upon European industrial civilization. Finally, increased foreign tariffs of recent years, currently being made heavier for purposes of maintaining gold standard conditions or restoring them where recently lost, will be heavily felt.

SETTLING FAVORABLE MERCHANDISE BALANCES

Classification.—The adjustment of favorable balances of trade under the complex conditions of modern international trade can never be traced completely, since merchandise transactions today represent no more than 50% of the nation's total international money transactions. It is possible, however, to classify the remaining 50% under service, capital income and cash transactions, and gather a fairly accurate description of the process of adjustment. Of course, no one today refers to these latter types of transactions as either the ultimate causes of, or results of the merchandise balance of trade. Even though all classes of international trade, visible and invisible, are closely related, each possesses a certain degree of independence from the rest, and the chance interplay of separate movements always goes a long way in their equating.

THE SERVICE BALANCE OF TRADE

Invisible Items.—What is generally regarded as the service balance of trade is the balance remaining from offsetting international payments for freights, government services abroad, tourist travel, immigrant remittances, royalties and similar so-

THE EXPORT AND IMPORT BALANCE

called "invisible." From 1920 to 1928, this balance was a comparatively stable adverse balance, but for 1929 there was a fairly sharp increase and the total deficit on service account amounted to \$1,043,000,000. For 1930, the balance was again high, aggregating \$976,000,000. The year 1931, doubtless, will witness a considerable reduction, for two chief reasons. First, judging from press reports, American tourist travel abroad, both to bordering countries and to overseas countries, exhibited a marked decrease. Second, immigrant remittances from America to foreign countries have been further affected adversely by continuing depression and unemployment. The adverse balances of tourist trade and immigrant remittances have regularly been the dominating balances in our total service trade.

THE CAPITAL BALANCE

Drop in Long-Term Investments.—The capital balance, the annual balance of all long- and short-term loan and investment transactions of the United States and foreign countries, has had a record for extreme instability in the last nine years, although it has regularly been an offset to the export trade balance. The year 1931 has proved no exception. On the side of long-term capital, owing to the succession of foreign financial and political catastrophes in South America and in Europe, and to domestic security market uncertainty, foreign bond prices have experienced a virtually complete demoralization. American financial institutions and private investors, consequently, have been loath to place new funds in foreign security offerings. Under these circumstances, a total of only \$233,000,000 of such issues (minus refunding) were offered in the first nine months (\$208,000,000 of which were floated from January to June), as compared with \$735,000,000 in the same period of 1930 and \$538,000,000 in 1929, both regarded as poor years for foreign securities.

New Investment Factors.—In addition, the number of new direct American investments reported has

not been extremely large, although currency depreciation may have had the effect of stimulating it in certain countries in the last few months. Liquidation and resale of such investments in tardy recognition of their ill-advisedness will surely reduce the total.

Capital Repayment.—Capital exports on account of open market security dealings may possibly be substantial. American purchases of foreign securities on the open market most certainly have been less than in 1930, a lean year also. During the first few months of 1931, foreigners, especially Europeans, possibly were active buyers on American markets of their own and American securities. Financial disturbances in Europe in the late spring and summer effectively checked the former movement, however, and for a time stimulated the latter. When Europe became panicky over America's ability to meet gold demands on her money markets, however, selling of American securities by foreigners became more common than buying. Capital repayment, though at first possibly encouraged by low foreign bond prices in the United States, was subsequently checked in most debtor countries by financial disturbances, currency depreciation, or foreign exchange controls instituted for the purpose of protecting currency stability.

Short-term Capital Trends.—On the side of short-term capital, the main tide for the first nine months of the year was an outflowing one. New short-term credits to foreigners, as contrasted with last year's trend, were definitely curtailed, and many outstanding credits matured and were paid off or were recalled. On the other hand, foreign deposits and other short-term investments here, amounting at the beginning of the year to \$2,764,000,000, were drastically reduced following Germany's and central Europe's difficulties, and the abandonment of the gold standard by England and certain of the northern European nations such as Denmark, Norway, Sweden and Finland. Withdrawals, in fact, reached panic proportions after September 7 and last-

XIII. MANUFACTURES AND TRANSPORTATION

ing up to the date of writing this review. Since the largest proportion of these deposits represented foreign exchange reserves of central banks operating on a gold or gold-foreign exchange monetary standard, it may be concluded that the succession of international financial disasters has definitely undermined the confidence necessary for the employment of foreign exchange assets as monetary reserves.

THE CAPITAL INCOME BALANCE

Income Reduction.—For 1930, the compiler of the official balance of payments for the country, estimated the income balance of the United States at \$828,000,000 as against \$777,000,000 in 1928. Thus the gradually upward movement of this balance since 1920 has continued, due to a more rapidly growing creditor than debtor account for the nation as a whole. Without considering here the changes in our international debtor-creditor position, we may note that this year's capital income account will be greatly reduced. In the first place, over half of our private foreign investments (totalling \$15,200,000,000 at the first of the year) are direct investments and will yield but a nominal return because of world-wide depression and widespread currency depreciation. In the second place, the other half of our private foreign investments are in foreign issues publicly offered in American markets or foreign securities acquired on open markets abroad. These have been subject in a few cases to actual interest default (notably Brazilian and Chilean issues) and the number of defaults may rapidly increase following the violence of summer and fall financial disturbances. Finally, as a consequence of the Hoover Moratorium, eliminating all political debt payments arising out of the World War for one year dating from July 1, our capital income account (since these payments are so classed) will be reduced for the year by some \$110,000,000.

Outgoing Payments.—Against the reductions on the income side, there will of course be reductions on the

outgo side from a likely diminution of foreign holdings of American bonds, from dividend reductions on foreign holdings of American stocks and from a smaller net yield on foreign short-term investments in American markets resulting from the great contraction of such investments in the early fall. Nevertheless, the latter reductions will not offset the former, and the balance remaining on the income side will be the smallest in years.

THE GOLD BALANCE

Gold Movements.—When gold standard conditions widely prevail, gold is the balancing or cash factor in international trade. For the most part, it moves only when recourse to all other measures for adjusting international balances have been exhausted, but its movements are ordinarily not excessively large. In this respect, the year 1931 has been extraordinary, not only for the United States but for other leading countries as well. During the entire year 1930, the United States imported \$396,000,000 of gold and exported \$116,000,000 (the movement for the first nine months being \$287,000,000 on the import side and \$101,000,000 on the export side). Contrasting conspicuously with these figures are those for 1931. For the first nine months, imports aggregated \$367,000,000 and exports barely \$31,000,000,—\$29,000,000 being exported in September. The figures in themselves depict nothing abnormal, when related to gold movements in other years, but they do not tell the whole story.

Heavy Outward Flow from U. S.—Gold does not necessarily move at once to foreign countries when it has been definitely withdrawn from our stocks at the foreigner's request. Often it is held for a time at a Federal Reserve Bank on earmark account, and does not appear in export figures until months later. Heavy earmarkings took place in September, totalling \$277,000,000, leaving a "real" gold import balance for the first nine months of \$59,000,000. October witnessed the dramatic over-

CONDITIONS OF INTERNAL COMMERCE

turn of this remaining "real" gold import balance, with actual exports up to the 24th of the month amounting to \$322,000,000 and earmarking adding another \$151,000,000. Thus, within two months, the United States lost an effective total of \$779,000,000 of gold to foreign countries (chiefly France), offset, of course, by previous imports of \$367,000,000 and \$35,000,000 in October. For the year up to November, the gold balance was on the export side to the amount of \$379,000,000, or the largest gold loss of any similar period in our history.

CONCLUSIONS

No one familiar with the facts could assert that our merchandise exports in the aggregate could have maintained the high levels attained prior to 1930 and their excess over imports without the offsetting factor of our large capital exports. Nor could the accumulating service charges on these capital exports have been met without affecting our trade balance, without the rising unfavorable balances of our service trade. Without this combination of developments, in fact, foreign nations could not have acquired the resources to adjust the merchandise balances against them and to meet the growing volume of contractual payments due Americans on mounting debts, our purchases of

foreign merchandise being what they were. Like fools in paradise, it was thought that the process could be made to go on forever, and the Tariff Act of 1930 was passed with scarcely a thought of the additional obstacles being placed in the way of the orderly liquidation of a vast amount of international debt through the processes of trade.

In a single year, America's international creditor position, built up over a period of almost two decades, has virtually crumbled over our heads. The share of our huge foreign investments put into foreign properties directly, we are certain, is not worth the \$8,000,000,000 invested in them. Furthermore, using market appraisals of future chances of repayment as a measure, our holdings of \$7,450,000,000 of foreign securities publicly offered to us, we know, are not worth 75% of the nominal figure stated. Our political (war) loan assets, we admit, are largely valueless and we talk officially of cancellation *in toto* or in part. That is not all. Our short-term investments are in some cases so involved that our losses are bound to be large. Even the foreigners, in scepticism over our lot, have withdrawn in volume their short-term deposits here and liquidated many of their long-term investments.

CONDITIONS OF INTERNAL COMMERCE

By ERNEST A. TUPPER

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THE ECONOMIC SITUATION

Commerce of the United States during 1931, both foreign and domestic, continued to recede farther from the exceptionally high levels established in 1929. In the first half of the year some expansion in domestic business occurred, resulting in an upturn of more than seasonal proportions in industrial output, an increase in employment and payrolls and an

improvement in security markets. By May 1931, however, the factors tending to improve economic conditions were overshadowed by unfavorable developments abroad and at home, and activity continued to lessen from then until the close of the year when the various indexes of the state of business were at the lowest point of the current depression. Financial difficulties and political uncertainties abroad were climaxed by the aban-

XIII. MANUFACTURES AND TRANSPORTATION

donment of the gold standard in Great Britain and numerous other countries and finally resulted in an unprecedented withdrawal of foreign balances here. The gold outflow for a time assumed record proportions but ceased as suddenly as it had begun when the erroneous reports circulated abroad concerning the stability of our currency were corrected.

PRODUCTION AND CONSTRUCTION

Industrial.—The output of manufacturing establishments and of mines was further restricted during 1931. For the year as a whole the Federal Reserve Board's index declined about 16 per cent from the 1930 level to a point approximately 30 per cent below the record breaking heights of 1929. Nevertheless production during the year just ended was one-fourth greater than in 1921, the bottom of the post-war depression. Although operations in many of the individual industries reached extremely low levels the pronounced gains during the first few months of the year in certain industries producing principally consumers' goods, such as textiles, leather, and foodstuffs, were subsequently well maintained.

Agricultural.—During the first half of 1931 conditions in the 1930 drought area improved greatly but two other areas,—the Pacific Coast and Northern Plain States—experienced unusual drought and heat. The aggregate production of agricultural commodities, which has shown relatively little variation during the last few years, was larger in 1931 than in 1930. Larger crops of wheat and cotton were brought into the markets at a time when world supplies were exceptionally big with the result that the fall in farm prices was accentuated and total farm income diminished.

Building Activity.—Construction was in considerably smaller volume in 1931 than during other recent years. Many important projects undertaken as a result of the coöperation between the government and

public utility interests at the end of 1929, were brought to completion during the latter part of 1930 and the early months of 1931, and this class of construction declined. Contracts awarded for residential construction continued to shrink in value and volume as did all types of non-residential building. Compared with 1930, total contracts awarded, as reported by the F. W. Dodge Corporation, declined 30 per cent, with residential and public works and utility construction off 25 per cent and 28 per cent respectively.

DISTRIBUTION

Freight.—Primary distribution of goods as measured by total freight carloadings was about 20 per cent less than in 1930 and approximately 30 per cent below 1929. Shipments of merchandise in less than carload lots declined about 9 per cent from those of 1930 and 17 per cent from 1929. Part of these declines may possibly be accounted for by a relatively greater proportion of goods being moved by auto truck. Movement of commodities on canals and rivers was likewise substantially smaller and the lessened quantity of exports and imports reduced the demand for space on ocean-going vessels.

Sales.—Distribution of merchandise through department stores and certain other retail outlets held up surprisingly well during 1931 if allowance is made for price changes in the total value of sales. The dollar volume of department store sales was only 11 per cent below the preceding year and most of the decline resulted from the lower price level. Sales of the leading chain stores and mail order houses, the only other retail outlets for which current statistical data are available, were 6 per cent less in dollar volume than in 1930, although this year's total includes some new outlets. Stocks of goods in the hands of retailers have been consistently and substantially reduced during the depression and at the end of the year were at or close to the minimum necessary to trans-

RAILROADS

act efficiently even a subnormal volume of business.

PRICES

The rapid decline in wholesale, farm, and security prices during the past two years has had a demoralizing effect on business; it has brought about extreme uncertainty and a reluctance to enter into contractual relationships which involve anything but short term commitments. Wholesale prices in June, 1931, were 29 per cent below the high point in 1929 and at approximately the 1913 level. During the remainder of the year the index of wholesale prices remained practically stationary, which suggests the probability of greater stability in 1931. Prices of farm products fell off throughout the year and averaged 26 per cent lower in November than 12 months earlier with the result that the income of the farm population was materially reduced. Stock and bond prices declined sharply in the closing months of the year and

money rates continued to be extremely low.

FINANCE

Conditions at home and abroad had an enervating effect on the financial situation during 1931. Security markets reflected the improved tone of business during the early months of the year but in the last quarter were extremely weak. New capital issues were relatively small, total flotations amounting to about 55 per cent less than in 1930. Bank failures, especially among the smaller banks, were numerous and involved a large volume of deposits but the soundness of the banking structure has been unimpaired. Money in circulation increased rapidly up to the end of October but from then until the end of the year there was some return flow to the banks. Money rates continued to be extremely low but because of timidity and uncertainty there were relatively few new enterprises launched.

RAILROADS

By R. H. AISHTON

PRESIDENT, AMERICAN RAILWAY ASSOCIATION

GENERAL

Effect of Depression.—The year 1931 was clouded by the continued decline in railway traffic and revenues, in sympathy with the profound depression that affected all industry. Few signs of improvement were evident at the close of the year, although the country was hopefully awaiting better days in 1932.

Revenue Problems.—Railway executives early in 1931 considered a course of action that would improve their declining revenues, or would reduce their expenses. Operating and maintenance costs had already been cut to the bone, and there was slight chance of additional help in that direction, barring recourse to a wholesale reduction in wage schedules. Revenues could be increased only by an increase in freight rates,

and an application was therefore filed with the Interstate Commerce Commission in June, requesting authority to raise all freight rates and charges by fifteen per cent.

Rate Pooling Plan.—The Interstate Commerce Commission, under date of Oct. 16, 1931, denied the railroads' application for a fifteen per cent increase in freight rates. Recognizing the financial emergency facing many of the railway companies, however, the Commission proffered a pooling plan to the industry. Under this plan, the Commission suggested specific increases per car or per hundred weight on certain designated commodities, the increases to continue in effect only to the end of March, 1933, and the revenues derived from the increases to be pooled and distributed to those carriers which

should fail to earn their interest charges. In November the railways submitted the details of a pooling plan to the Commission, which they termed the Marshaling and Distributing Plan, 1931. This plan contemplated the distribution of the pooled funds on the basis of loans, rather than gratuities, to carriers whose earnings should prove insufficient to meet their interest payments.

I. C. C. Decisions and Hearings.

—While the Fifteen Per Cent Case was the outstanding rate case of 1931, the Interstate Commerce Commission handed down other important rate decisions as well. These related to rates on petroleum and petroleum products; class rates in the Eastern District; cotton, grain and grain products in the Western District, livestock in the Western District. Cognizance of motor truck competition is now being taken by the Interstate Commerce Commission in various decisions, notably the cotton rate decisions, and in others relating to more restricted localities. Hearings in Docket 23400, Co-ordination of Motor Transportation, were concluded by the Interstate Commerce Commission in the spring of 1931, but no report had been made at the end of the year. Hearings in Ex Parte 104, Investigation into railroad management, were begun by the Commission Sept. 15, covering four phases: (1) Railroad fuel; (2) Terminal services; (3) Construction of private side tracks, and (4) Traffic expenses.

Consolidation of railroads was furthered by the presentation to the Interstate Commerce Commission of the so-called "four-party" plan, designed to group the railway lines of the East into four principal systems: Baltimore and Ohio, New York Central, New York, Chicago and St. Louis (Nickel Plate), Chesapeake and Ohio, and Pennsylvania Railroad. Hearings before the Commission on this plan were set for early January, 1932. The Committee on Interstate Commerce of the Senate issued in committee print form the preliminary report of a study of railroad consolidations and unifications, made pursuant to Senate Resolution 290 of

the 71st Congress, by William C. Green, special counsel.

Splawn Report.—The Committee on Interstate and Foreign Commerce of the House of Representatives issued a three-volume report on the regulation of stock ownership in railroads (71st Cong., 3d sess. House. Rept. 2789). It is popularly known as the "Splawn Report on Holding Companies," the investigation being directed by Dr. W. M. W. Splawn.

Wages.—The question of adjustments in railroad wages was under discussion at the close of 1931, being initiated by informal conferences between representatives of the railway executives and of the several railway labor groups.

Motor Truck and Other Competition.—Competition from other agencies of transportation continued to increase, especially in the case of motor trucks on the highways and in the case of waterways. While some states applied new measures of regulation to motor truck operation during the year, no interstate regulation exists, and the rail carriers are suffering from a condition under which their closest competitors enjoy a relative freedom from regulation. Competition from oil and gasoline pipe lines is also on the increase. Competition from water carriers, especially the government-owned and operated barge line on the Mississippi and Warrior Rivers, was also felt more keenly than in previous years.

RAILROAD FACILITIES

Mileage.—The average miles of road operated by Class I rail carriers in the United States (Class I roads are those whose gross incomes are \$1,000,000 or more, excluding switching and terminal companies) were 241,584 miles in 1929 and 242,159 in 1930. The total track mileage of all railways was 429,054 miles in 1929, and 429,883 miles in 1930; track miles include second, third, and fourth main tracks, yard tracks, and sidings. The Class I carriers of the country operate about 92 per cent of the total steam railway mileage, and, due to the long-haul service which they perform, they

RAILROADS

receive about 97 per cent of total rail revenues.

Cars and Locomotives.—Class I railways in 1929 had in service 52,259 passenger train cars and 52,130 in 1930. The number of locomotives in service on Class I railroads in 1929 was 57,571, and was 56,493 in 1930. The increase in average tractive power has characterized the steam locomotive for many years. Average tractive power per locomotive was 28,305 pounds in 1911, 36,365 pounds in 1920, 40,666 pounds in 1925, and had risen to 45,225 pounds in 1930. From 1911 to 1925 the actual number of freight-carrying cars owned by Class I railways in the United States steadily increased. The total number of these cars in 1911 was 2,117,644. In 1925 the number was 2,357,234, which marks the peak of ownership as to number of cars. Since 1925 there has been a steady decrease in the number of freight cars, as shown by the following table:

<i>Year</i>	<i>Number of freight-carrying cars</i>
1925	2,357,234
1926	2,348,679
1927	2,324,834
1928	2,297,589
1929	2,277,505
1930	2,276,834

While there has been a continuing decrease in the number of freight car units, at the same time the carrying capacity per unit has shown a continuing increase. For example, the average capacity per car in 1925 was 44.8 tons, while in 1930 it was 46.6 tons. The older type of smaller capacity freight cars is being displaced by new equipment of greater unit capacity, so much so that despite the decline in number of units between 1925 and 1930, the aggregate capacity of all cars in service increased.

RAILWAY FINANCES

Property Investment.—The total property investment in road and equipment of Class I railways at the end of 1929 was \$24,884,674,485. This increased to \$25,485,622,833 in 1930.

Materials and supplies in 1929 amounted to \$470,072,929, and \$430,989,284 in 1930. Working capital or cash on hand amounted to \$515,375,569 in 1929, and \$438,074,144 in 1930.

Improvements.—Gross capital expenditures of Class I railways during the eight years from 1923 to 1930, inclusive, aggregated \$6,741,716,000. These expenditures were for improvements or additions to plant and rolling stock. Gross capital expenditures for 1930 were \$872,608,000. Gross capital expenditures made by Class I railways during the first six months of 1931 amounted to \$199,133,000. This was a decline of \$269,172,000 under the corresponding total of expenditures for the first half of 1930. The capital expenditures for the same eight-year period were distributed as follows: \$3,047,945,000 was invested in locomotives, freight and passenger train cars, and other equipment; the amount invested during the period in roadway and structures was \$3,693,771,000. The expenditures averaged slightly above 55 per cent for roadway and structures, and 45 per cent for equipment.

EMPLOYMENT

The average number of employees on Class I railways was 1,660,850 in 1929 and 1,487,730 in 1930. The total amount of compensation to these employees was \$2,896,566,351 in 1929, and \$2,550,553,940 in 1930. Average hourly compensation per employee was 66.6 cents in 1929 and 67.8 cents in 1930. Average annual earnings per employee were \$1,744.03 in 1929 and \$1,714.39 in 1930.

TRAFFIC

Freight.—The total freight revenue received by Class I carriers was \$4,825,622,121 in 1929 and \$4,083,241,558 in 1930. For the nine months ended Sept. 30, 1931, total freight revenues were \$2,514,335,705, compared with \$3,107,900,590 for the same period in 1930, marking a reduction in freight revenues of 19.1 per cent from 1930 to 1931. Average receipts per ton-mile in 1929 were 1.076 cents and

XIII. MANUFACTURES AND TRANSPORTATION

in 1930 were 1.063 cents. The average length of freight haul per railway in 1929 was 182.46 miles, and 185.86 miles in 1930. Total revenue tons carried by Class I railways in 1929 were 2,451,601,084 and 2,063,077,591 in 1930. The revenue ton-miles of these carriers in 1929 were 447,321,561,129, and in 1930 were 383,449,588,491. Tons per loaded car originated were 35.4 in 1929 and 35.7 in 1930, exclusive of less than carload merchandise.

Passenger.—The total passenger revenues of Class I railways were \$873,564,246 in 1929 and \$729,471,420 in 1930. Average receipts per passenger-mile were 2.808 cents in 1929, and 2.717 cents in 1930. The record shows an almost continuous decline in the number of revenue passengers carried by Class I railways since 1920, in which year the number of revenue passengers was 1,234,862,048. This had declined to 780,468,302 passengers in 1929, and to 703,598,121 passengers in 1930. Revenue passenger-miles totalled 46,848,667,987 in 1920. In 1929 revenue passenger miles were 31,074,134,542, and further declined to 26,814,824,535 in 1930.

Freight Service.—The rail carriers have continued to maintain the high level of transportation service which has characterized them during recent years. This high level of transportation service is due primarily to the large capital expenditures which the carriers have made since 1922. A second important factor is cooperation among the carriers themselves, and between shippers and carriers. The result has been that car shortages are now a thing of the past. Millions of freight cars, however, are not distributed to serve the particular needs of individual shippers everywhere in this broad country without considerable planning and foresight. The supplying of particular needs for livestock, grain, coal and other special cars must not disturb the great ebb and flow of other business. In order that rail carriers may have closer contact with the needs of shippers in respect to car service, thirteen shippers' regional ad-

visory boards have been organized. Through these boards, which have a membership of more than 15,000, splendid cooperation between shippers and carriers in the matter of car service has been attained. No freight car shortages occurred during the year 1930, the first year during which such a record has been achieved. The average freight car surplus in 1930 stood at 456,378 cars, and had increased to 697,000 cars at the beginning of the year 1931.

Passenger Service.—Despite the decrease in passenger revenues of the rail carriers, they have maintained their passenger service at a high degree of excellence. Speed has been maintained, and new comforts have been added to attract the traveling public. In connection with coordinated bus services, some railways have discontinued operation of certain passenger trains rendered unprofitable by competition of motor vehicles on improved highways.

REVENUES AND EXPENSES

Operating Revenues.—Total operating revenues of the Class I railways were \$6,279,520,544 in 1929 and \$5,281,196,870 in 1930; the 1929 total included approximately \$37,000,000 of mail pay applicable to the prior years 1921 to 1928. For the first nine months of 1931, total operating revenues were \$3,279,306,288 for Class I railways, including large switching and terminal companies, compared with \$4,083,333,090 for the same period in 1930. This marks a decrease in total operating revenues, as between these two periods, of 19.7 per cent.

Operating Expenses.—Total operating expenses of the Class I railways for 1929 were \$4,506,056,262, and were reduced to \$3,930,928,687 in 1930. For the nine months ended Sept. 30, 1931, total operating expenses for Class I railways, including large switching and terminal companies, were \$2,524,542,892 compared with \$3,052,972,874 for a similar period in 1930, marking a decrease of 17.3 per cent.

Net Railway Operating Income.

—Net railway operating income for Class I railways was \$1,251,697,938 in 1929, and \$868,878,773 in 1930. For the nine-month period ended Sept. 30, 1931, the net railway operating income, including large switching and terminal companies, was \$407,660,067 compared with \$660,901,035 for the same period in 1929, a decrease of 38.3 per cent.

Operating Ratio.—The operating ratio for Class I railways was 71.76 per cent in 1929 and 74.43 per cent in 1930. For the period of nine months ended Sept. 30, 1931, the operating ratio was 76.98 per cent, compared with 74.77 per cent for the corresponding period of 1930.

Taxes.—Railway tax accruals for Class I railways for 1929 were \$396,682,634, and for 1930 amounted to \$348,553,953. The decline in the total of tax payments was due to the smaller amount of Federal income tax, which in turn was the result of a decline in railway net income; state and local taxes paid by the railways continued their upward trend, and were greater in 1930 than in any preceding year. Class I railways paid to state and local governments taxes to the amount of \$307,238,957, in 1929, and approximately \$307,573,953 in 1930.

Rate of Return.—The rate of return on investment in road and equipment of Class I railways, including materials, supplies and cash on hand, averaged 4.84 per cent in 1929 and 3.30 per cent in 1930. For the nine months ending September 30, 1931, the corresponding rate of return was 2.08 per cent, compared with 3.44 per cent for the same period of 1930.

RAILROAD PURCHASES

Taken as a whole, the railways of the United States represent probably the largest single purchaser of the products of the basic industries of the country. They use or consume annually about 25 per cent of the total bituminous coal production and, in addition, about five per cent of the

total anthracite production in the United States. Their fuel requirements also include about 20 per cent of the total fuel oil output. Directly and indirectly, the railroads consume more than 20 per cent of the total timber cut of the country, and approximately 17 per cent of the total iron and steel production. The fuel bill of Class I railways in 1930 amounted to \$306,506,000. Their direct purchases of forest products equalled \$134,600,000. Expenditures for iron and steel products equalled \$329,700,000. The grand total of their purchases for 1930 was \$1,038,500,000.

RAILWAY MAINTENANCE

The total expenditures made by Class I railways for maintenance of way and structures in 1929 were \$855,354,867, and \$705,470,940 in 1930. The total expenditures of these same carriers for maintenance of equipment were \$1,202,912,246 in 1929 and \$1,019,265,278 in 1930. The percentage of freight cars awaiting repairs Oct. 15, 1931, was 8.9 per cent of the total number, while the proportion of locomotives awaiting classified repairs at the same date was 12.2 per cent. Locomotives in storage Oct. 15, 1931, numbered 9,629, compared with 7,618 on the same day of 1930. Idle or surplus freight cars on the same date in 1931 numbered 532,301, compared with 401,659 on October 15, 1930.

Possibly the outstanding feature of rail operations in 1931 was the determined and consistent effort of the railways to maintain their properties, to render efficient service to the public, and to continue their normal activities on as economical a basis as possible, consistent with good service. They did their part in facing the very difficult situation affecting industry, the public and the railroads alike during this time of depression, hopeful that with a resumption of normal industrial activity they may be able to continue to meet their obligations as the principal agency of transportation in this country in furnishing efficient, dependable and economical service to the American people.

XIII. MANUFACTURES AND TRANSPORTATION

HIGHWAYS AND MOTOR ROADS

By THOMAS H. MACDONALD

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MILEAGE OF RURAL ROADS

All Classes.—According to the best available estimates there were 3,009,066 miles of public roads in the United States on Jan. 1, 1931. This mileage includes roads of all classes outside the limits of municipalities, and is made up in very large part of local roads of small importance, many of them mere right-of-ways established by law along each section line in the states of the Middle West. The roads which accommodate by far the greater part of the rapidly-growing traffic of motor vehicles are comparatively limited in mileage and, in the main, are included in the Federal-aid or State highway systems, although the more important county and local roads, especially in metropolitan areas also accommodate a very considerable and growing traffic.

The Federal-aid system which includes, as a whole, the roads of highest traffic importance was designated jointly by the Federal and State highway authorities following the passage of the Federal Highway Act in 1921. This system which was originally limited to 7 per cent of the total highway mileage of record at the time the law was enacted, may now be increased by an amount equal to the mileage of the designated system in each state lying within the boundaries of national forests, Indian reservations, and other Federal reservations. The designated system now includes 196,877 miles.

State Systems.—In most instances the roads selected for inclusion in the Federal-aid system have also been designated by the states as units in the several State highway systems, but these latter systems are the most extensive, including in addition to the Federal-aid sections others which are not included in the Federal scheme. In the aggregate these systems of the states included 324,496 miles on Jan. 1, 1930.

County or Local.—All roads not included in one or the other of the foregoing main systems are county or local roads, and with few exceptions are of less importance than Federal-aid and state roads. The mileage of roads of this general class on Jan. 1, 1931, was approximately 2,684,570 miles.

THE STATUS OF ROAD IMPROVEMENT

Federal-aid Administration.—All roads included in the Federal-aid highway system are eligible for improvement with Federal monetary aid. The improvement is carried out under the immediate direction of the State highway departments subject to the approval of the Federal Bureau of Public Roads, acting for the Secretary of Agriculture, who is charged with the administration of the Federal Highway Act, and any amount not exceeding 50 per cent of the cost, or \$15,000.00 per mile, may be paid by the Federal Government. This is the general limitation, and provision is made for increasing both the rate of Federal participation and the maximum payment per mile in the public land States in proportion to the area of unappropriated public land. Upon completion of the original 7 per cent system in any state, Federal participation may be increased to \$25,000 per mile under certain conditions.

Improvement and Construction Mileage.—On June 30, 1931, the roads of this system which had been improved with Federal assistance reached a total of 88,713 miles, and on the same date other roads aggregating 16,480 miles were under construction, and 2,978 miles had been approved for construction in the immediate future, making a total of 108,171 miles already improved or in course of improvement with Federal aid.

Independent State Work.—The states have done considerable im-

HIGHWAYS AND MOTOR ROADS

provement of the Federal-aid system without assistance. Recent figures on the work thus done are not available but one year ago it was estimated that nearly 87 per cent of the total designated mileage had been initially improved and approximately 75 per cent of the entire mileage had been surfaced with materials varying, according to the needs of traffic, from mixtures of sand and clay constituting so-called sand-clay surfaces to the most durable types of pavements. The State highway systems which, as previously stated, are coincident with, but more extensive than the Federal-aid system, are improved as a whole, to nearly the same degree. On Jan. 1, 1931, the total of the 324,496 miles then embraced in these systems included 28,365 miles improved by grading and draining, and 226,221 miles of surfaced highways, the types of surfacing varying, as in the case of the Federal-aid system, from sand-clay to durable pavements.

County and Local Roads.—The latest available statistics of county and local roads are those of Jan. 1, 1931. On that date, as previously stated, there were approximately 2,684,570 miles of such roads, of which

467,338 miles or over 17 per cent were surfaced.

TYPES OF SURFACED ROADS

In each of the systems mentioned the surfaced roads are of various types, of which the principal are sand-clay, gravel, water-bound and bituminous macadam surfaces, and sheet asphalt, bituminous concrete, Portland cement concrete, and brick and other block pavements. Of these several types, the sand-clay, gravel and water-bound macadam with the unsurfaced but graded and drained roads are frankly regarded as temporary or transitory, to be replaced by a more durable type when traffic reaches a sufficient value to require and justify such replacement. However, in recent years the traffic capacity of low-type surfaces has been considerably increased by the development of bituminous surface treatments and mixtures. The other types—bituminous macadam, sheet asphalt, bituminous concrete, Portland cement concrete, and brick and other block pavements—are classified as durable, and are suited to the needs of heavy motor traffic.

CLASSIFICATION OF HIGHWAYS BY TYPE

(as of January 1, 1931)

Type	State Highways (Miles)	Local Roads (Miles)	All Highways (Miles)
Unimproved or partly graded.....	69,910	2,217,232	2,287,142
Graded and drained.....	28,365	*	28,365*
Sand-clay and topsoil.....	15,152	71,907	87,059
Gravel, treated and untreated.....	106,728	310,308	417,036
Waterbound macadam, treated and untreated.....	20,229	43,527	63,756
Bituminous macadam.....	14,590	19,059	33,649
Bituminous concrete and sheet asphalt.....	8,071	6,019	14,090
Portland cement concrete.....	58,208	14,656	72,864
Brick and other block pavements.....	3,243	1,862	5,105
Total.....	324,496	2,684,570	3,009,066

* Graded and drained local roads have been included with unimproved and partly graded roads because of lack of data.

ROAD CONSTRUCTION AND MAINTENANCE

Mileage in 1930.—During 1930 there was a total of 87,717 miles of road built on the state and local road systems, of which the surfaced portions amounted to 63,347 miles. Of these totals 35,277 miles, including 27,464 miles of surfaced roadways,

have been constructed by the States with and without Federal aid, and 52,440 miles, of which 35,883 miles have been surfaced, have been built by the county and local governments. During the fiscal year ended June 30, 1931, the Federal-aid roads brought to completion, including those improved for the first time with Federal

XIII. MANUFACTURES AND TRANSPORTATION

aid and those further improved by stage construction or reconstruction totaled 11,033 miles.

Expenditures.—Since 1921 the annual expenditures for all rural road construction and maintenance have exceeded a billion dollars, a large and increasing proportion of which is provided by the taxes levied on motor vehicles and motor fuel. Large as it is, this expenditure is only three-fourths of the annual expenditure by owners of motor vehicles for gasoline alone. In this fact there is a suggestion of the reason for the public approval and economic wisdom of the highway expenditures, since the money thus invested results in a reduction of the cost of gasoline and other operating expenses of motor vehicles which demonstrably exceeds the expenditure. In 1930 the expenditures of the state highway departments (including Federal aid) amounted to \$1,049,502,478; those of the counties and other local governments were \$813,071,695. These expenditures are classified according to their purpose as follows:

By state highway departments:*

Road and bridge construction.....	\$ 713,117,045
Road and bridge maintenance.....	191,683,477
Interest and principal on bonds.....	120,172,772
Equipment and miscellaneous.....	24,529,184
Total.....	\$1,049,502,478

By counties and other local governments:†

Road and bridge construction.....	\$ 296,594,546
Road and bridge maintenance.....	284,228,960
Interest and principal on bonds.....	195,181,372
Miscellaneous purposes....	37,066,817
Total.....	\$ 813,071,695
Grand total.....	\$1,862,574,173

* Does not include \$86,897,782 transferred by states to counties and expenditures required by law but not related to highways.

† Does not include \$38,614,930 transferred to states by counties and expenditures required by law but not related to highways.

USAGE OF ROADS BY MOTOR VEHICLES

During 1930, according to information received from the states, the consumption of gasoline by motor

vehicles amounted to approximately 14,751,000,000 gallons, and it is estimated that the total for 1931 will exceed 15,000,000,000 gallons, which at 12 miles per gallon (the approximate average consumption by vehicles of all makes and types) would indicate that the annual travel by motor vehicles amounts at present to over 180,000,000,000 vehicle-miles, an almost inconceivable figure. Yet large as it is it must be more than doubled to obtain a measure of the passenger-mileage for which the automobiles and improved roads and streets are responsible. This tremendous annual passenger movement by highway passed the rail movement some years ago and is now nearly 12 times as great.

NUMBERED UNITED STATES HIGHWAYS

Mileage and Designation.—Of special interest to all owners of motor vehicles is the network of principal interstate and transcontinental highways, known as United States highways, designated in 1925 by agreement between the highway authorities of all states and the Federal Government. There are approximately 100,000 miles of such highways comprising the most direct and feasible interstate and transcontinental connections, and a plan has been adopted and is now in general effect, whereby the routes which compose this important network are uniformly designated by numbers and clearly marked with warning and danger signs in nearly all states.

Routes.—In this system, which is made up of the most important sections of the Federal-aid and state systems, there are approximately 180 routes, and such routes are marked, throughout their entire length in nearly all states traversed, by the same distinctive number, displayed on a white shield-shaped marker. All east-and-west routes are being designated by even numbers, the more important in multiples of 10, as 10, 20, 30, etc. The north-and-south routes are being designated by odd numbers, and the more important of

MOTOR BUS SERVICE

these roads are being indicated by two-digit numbers ending in one or five, as 11, 15, etc.

Markers and Signs.—For the guidance of travelers these routes have been or are being marked with standard direction and warning signs, which are readily distinguishable by their shape and color as well as by the warning and information printed upon them, and they thus indicate at a glance the nature of the danger to be avoided or the character of the information they carry. All danger and warning signs are composed of a yellow background with black lettering. They are made in four shapes indicative of different degrees of dan-

ger. Thus, an octagonal sign is used to give warning of such extreme danger as to require a complete stop. A round sign is posted at all railroad crossings, diamond-shaped signs give notice of such dangerous conditions as curves, steep grades, narrow bridges, etc.; and square signs are posted at points of occasional danger such as approaches to schools, churches hospitals, etc. All directional and informational signs are white with black lettering, and all are rectangular in shape. Those calling attention to legal speed limits will be in the form of a vertical rectangle; all others will have their longer dimension horizontal.

MOTOR BUS SERVICE

By CARL W. STOCKS

EDITOR, *Bus Transportation*

OUTSTANDING FACTORS IN THE INDUSTRY

General.—Certain factors in the motor bus industry in 1931 stand out that are worthy of emphasis. First, the failure of the concerted effort, through the state legislatures meeting during the year, to relegate the motor bus industry to the backwash of the transportation field. Second, the showing of the industry during a year of acute financial distress in which it has been difficult for even more firmly intrenched businesses to keep their heads above water. And third, the accelerated construction of union passenger terminals by the intercity carriers in the face of falling revenues in an effort to stimulate further increase in traffic.

Economic Status.—The economic status of the industry, resulting from general business distress, may be dealt with briefly. Compared with other industries during the past year, buses have done remarkably well. True, there have been a few instances of failures. But in spite of the depression and consequent reduced traffic, the fare trend has been consistently lowered to stimulate patronage.

Traffic and Revenue.—Industrial inactivity has resulted in a decrease in city riding while attractive fares on intercity lines has helped to maintain a more constant stream of travel. City operations in 1931 will probably show a deficit while intercity lines will report a profit, sufficient to wipe out a deficit in the grand total. Total gross revenue for 1930 was \$326,000,000 as against \$322,000,000 in 1929. Of this amount \$109,000,000 was derived from city traffic in both years and from intercity traffic \$205,000,000 in 1930 and \$201,000,000 in 1929. The trend of 1931 totals is indicated in the 1929-1930 comparison.

Construction and Equipment.—Terminal and garage construction, purchase of new rolling stock and maintenance equipment has continued throughout the year at a fairly even pace, but naturally in reduced volume from previous years with an exception, perhaps, in terminal building activity. The year just passed was characterized by a decided improvement in better maintenance facilities due to a widespread recognition of the value of preventive maintenance systems.

XIII. MANUFACTURES AND TRANSPORTATION

Company Investment.—Terminal construction is an outstanding factor in 1931 which had its roots as such in 1930. In last year's article, the total investment in terminals, garages and shops for 1929 was reported as \$110,000,000. In 1930, it was \$123,500,000. Incomplete records for ten months of 1931 indicate that new terminal and garage construction alone, not including equipment investment, will run close to an expenditure of \$5,000,000.

Rolling Stock.—Purchased rolling stock for the first ten months of 1931, as reported by five leading manufacturers, compares most favorably with 1930, considering acute conditions of the period. Five manufacturers for ten months in 1931 delivered 1,780 new buses as compared with 2,904 delivered by six manufacturers in 1930. The total number of buses in operation at the end of 1930 was 95,400, as against 92,500 in 1929. Of this number 48,250 in 1930 and 48,350 in 1929 are classed as revenue earning common carriers and the remainder school and miscellaneous vehicles. City buses in 1930 showed a gain over 1929 while the number of buses in intercity operation fell off a few hundred, due in part to an increase in capacity.

OPERATION AND FINANCES

Operating Companies.—Due to widespread consolidation of companies and pooling of interest, a decrease is again noted in the number of operating companies. There were 5,875 revenue common carriers at the close of 1930 as compared with 6,000 in 1929. Total companies of all classes number 23,490 as against 23,928. Steam railroads and electric railways owned more bus operations in 1930 while those in the hands of independent carriers decreased.

Revenue and Mileage.—In spite of the loss in the number of operating companies, the total gross revenue, total passengers, passenger miles and miles of route operated showed substantial increases in 1930. Total gross revenue increased from \$322,000,000 to \$326,000,000; more than 1,000,000,000 passenger miles were added in 1930, bringing the 1929 fig-

ure up from 10,985,000,000 to 11,280,000,000. Total number of passengers increased from 1,774,000,000 to 1,784,000,000. There were 347,635 miles of route in 1929 and 367,000 in 1930.

School Transportation.—Transportation of school children by bus is of ever-increasing importance in our educational system; 60,000,000 more children were carried in 1930 than in 1929, making a total of 460,000,000.

Tax Payments.—According to recent calculations, common carrier buses in 1930 paid taxes amounting to \$36,100,000 or 9 per cent of their investment. The average tax per bus was \$783.32 as compared to \$32 for the average private automobile. Buses paid in special taxes per bus-mile of highway used \$90.87 or about 19 per cent of the total yearly highway expenditure. Common carrier buses, on this basis, paid nine per cent of their gross receipts in taxes, or about 65 per cent of their net operating income. Taxes on common carrier buses have increased 125 per cent since 1925.

Merchandising.—One of the substantial developments of the year was the effort made toward a more intelligent merchandising. Under this heading is grouped advertising, organized publicity, safety work and employee training. These things have been continued and expanded throughout the industry. This is said with the world-wide situation in mind and in comparison with 1930. What might have been done along these lines had 1931 been a normal revenue-producing year, is hard to conjecture but the venture is made that such expenditures would have reached astounding proportions.

TRANSPORTATION EXPANSION

Bus Fleets.—Some measure of expansion in 1930 may be gained from the increased size of bus fleets having 100 or more buses and the number of cities with no other form of transportation than buses. At the end of 1930 there were 56 fleets having 100 or more buses. These 56 companies operated 14,233 buses over 97,529 route miles as compared with 43

MOTOR BUS SERVICE

fleets, 11,998 buses and 71,353 miles in 1929 and 2 fleets, 588 buses and 380 miles in 1921. Records for the first ten months of 1931 indicate that there will be five to ten additions to this total for 1931.

City Traffic.—Cities having buses as the sole means of transportation numbered 222 at the end of 1930, an increase of 33 over 1929. There are 1,636 buses in these cities, operating on 2,102 miles of route. In 1922 there were 15 such cities. Returns for 1931 will undoubtedly show a substantial increase in this number.

LEGISLATION

Regulation.—Uppermost in the minds of bus operators during 1931 was the question of regulation. The industry suffered a disappointment in the failure of Congress to pass the Parker-Couzens bill to regulate interstate bus operation. The possibility of the passage of such a law by the present session has been the subject of considerable discussion and opinions are about evenly divided.

Highway Bills.—The year just passed was a legislative year; 44 state bodies held regular sessions at which approximately 7,000 bills affecting highway users were introduced. Ten per cent of this number affected buses particularly. Only a small percentage of these bills became law. During the state legislative proceedings considerable attention was drawn to the deliberate program of rail propagandists to force legislation against buses.

That program failed only because the public was quick to realize it would lose a most valuable service with nothing offered to take its place. The efforts of the national bus association and of the various state associations in giving wide publicity to fundamental and undisputed facts concerning the motor industry helped materially in acquainting the legislators with the situation.

New taxation shows a distinctly higher trend and undoubtedly constitutes the most drastic class of legislation enacted. Gasoline taxes were raised in twelve states, the top of 7 cents a gallon being enacted in Florida.

Motor Vehicle Code.—Substantial progress toward bringing more uniformly into the basic motor vehicle laws was achieved through a wider adoption of the Uniform Motor Vehicle Code. Few changes were made in width, height, length and weight limitations and most changes were favorable.

Safety Enactments.—Considerable progress was made in safety legislation embracing liability insurance, license prerequisites and driver laws. Speed laws were modified along constructive lines.

Protective Laws.—Legally operated and financially responsible highway carriers, in spite of some adverse legislation, are in a better position now with regard to protective laws than a year ago.

STATISTICS OF REVENUE PLUS NON-REVENUE OPERATIONS

	1930	1929	1928	1927
Number of companies.....	23,490	23,928	23,311	22,611
Number of buses.....	95,400	92,500	92,325	85,636
Miles of route.....	827,100	782,485	719,250	635,609
Investment in rolling stock....	\$424,500,000	\$392,500,000	\$351,500,000	\$314,500,000
Investment in terminals, garages, etc.....	\$123,500,000	\$110,000,000	\$95,000,000	\$85,000,000

STATISTICS OF REVENUE BUS OPERATIONS

	1930	1929	1928	1927
Total gross revenue.....	\$326,000,000	\$322,000,000	\$299,000,000	\$264,000,000
City.....	\$109,000,000	\$109,000,000	\$106,500,000	\$92,500,000
Intercity.....	\$205,000,000	\$201,000,000	\$172,500,000	\$152,500,000
Sightseeing*.....	\$12,000,000	\$12,000,000	\$20,000,000	\$19,000,000
Passenger-miles.....	11,280,000,000	10,985,000,000	10,300,000,000	9,037,500,000
City.....	4,050,000,000	4,038,000,000	4,515,000,000	3,900,000,000
Intercity.....	7,080,000,000	6,797,000,000	5,535,000,000	4,900,000,000
Sightseeing*.....	150,000,000	150,000,000	250,000,000	237,500,000
Passengers.....	1,784,000,000	1,774,000,000	1,836,000,000	1,594,500,000
City.....	1,350,000,000	1,346,000,000	1,505,000,000	1,300,000,000

XIII. MANUFACTURES AND TRANSPORTATION

	1930	1929	1928	1927
Intercity.....	428,000,000	422,000,000	321,000,000	285,000,000
Sightseeing*.....	6,000,000	6,000,000	10,000,000	9,500,000
Investment in rolling stock....	\$306,000,000	\$282,000,000	\$251,500,000	\$223,500,000
Gasoline consumption.....	549,750,000	454,000,000	.....	.....
Number of operating companies	5,875	6,328	6,956	7,443
Divided by service:				
City.....	1,231	1,231		
Intercity.....	4,500	4,875	6,750	7,250
Sightseeing.....	400	455	343	341
Ownership basis:				
Motor carriers.....	5,549	6,000	6,634	7,104
Electric railways.....	267	262	260	272
Steam railroads.....	59	66	62	67
Number of buses operated.....	48,250	48,350	49,250	47,236
Divided by use:				
City.....	13,350	12,750		
Intercity.....	32,150	32,850	46,500	44,486
Sightseeing.....	2,750	2,750	2,750	2,750
Ownership basis:				
Motor carriers.....	34,664	35,640	37,932	37,750
Electric railways.....	11,827	11,256	10,062	8,492
Steam railroads.....	1,759	1,454	1,256	994
Miles of route operated.....	367,000	347,635	306,260	279,590
Divided by use:				
City.....	9,500	8,635		
Intercity.....	332,500	314,000	289,072	262,846
Sightseeing.....	25,000	25,000	17,188	16,744
Ownership basis:				
Motor carrier.....	314,700	300,000	269,187	250,573
Electric railway.....	24,300	22,399	20,280	18,498
Steam railroad.....	28,000	25,236	16,793	10,519

STATISTICS OF NON-REVENUE BUS OPERATIONS

	1930	1929	1928	1927
Passengers carried.....	478,800,000	418,800,000	384,800,000	322,000,000
School.....	460,000,000	400,000,000	360,000,000	300,000,000
Others.....	18,800,000	18,800,000	24,800,000	22,000,000
Number of operating agencies..	17,615	17,600	16,355	15,168
School.....	16,600	16,525	15,929	14,695
Others.....	1,015	1,075	426	473
Number of buses operated.....	47,150	44,150	43,075	38,400
School.....	45,000	42,000	40,875	35,900
Others.....	2,150	2,150	2,200	2,500
Miles of route operated.....	460,100	434,850	412,990	356,019
School.....	451,000	425,750	410,527	352,892
Others.....	9,100	9,100	2,463	3,127

MISCELLANEOUS BUS INDUSTRY STATISTICS

	1930	1929	1928	1927
Production of chassis.....	8,730	9,049	8,656	9,456
Production of bodies.....	8,915	8,864	7,379	7,778
States with bus regulations....	47	47	45	44
State associations.....	28	41	38	41

* Charter hire results of common carrier buses included prior to 1929.

COMMUNITY TRANSIT

By JOHN A. MILLER

EDITOR, *Transit Journal*

GENERAL

During the past year the community transit industry in the United States remained relatively stable considering the depressed conditions of general business. While the trend of

traffic was downward throughout the greater part of the year in all branches of transit, the decline was moderate compared with those in many other industries. The total number of passengers carried by the

electric railways and their affiliated bus systems in 1931 averaged about 8 per cent below the figure for 1930. This comparatively small decrease, however, created rather serious problems for the operating companies, coming as it did after a decrease of about the same proportions during the preceding year. Definite traffic figures for bus operations not affiliated with the electric railways are not available, but the data obtainable show the same general trend. Traffic on the electrified suburban railroads also declined moderately. Widespread unemployment was the major cause of the decline in traffic handled by the various forms of transit. This is shown clearly by the fact that the traffic figures for individual cities varied in close conformity with local employment conditions. Gross revenue of the community transit industry declined in about the same ratio as the number of passengers carried, there being no marked change in the average fare. The operating companies were able to offset the loss in revenue to some extent through reduction in expenses. Substantial savings were made as a result of lower prices for materials. Further savings were effected by curtailment of service in proportion to the decrease in traffic. In general, however, it was found impracticable to effect sufficient economies to preserve the net revenue at the figure for the preceding year.

EMPLOYMENT

Efforts were made by the operating companies to avoid economies that would add to the prevailing unemployment. Curtailment of service necessarily resulted in a reduction in working hours and smaller earnings for the individual employee, but the total number of persons on the payrolls remained nearly the same as for the past two years. A survey made by *Electric Railway Journal* in April showed the number of electric railway employees to be approximately 93 per cent of the figure of two years ago. A considerable number, however, were found to be working on a

somewhat reduced time basis. Some reductions were made in wage rates during the year, the outstanding instance being a cut of 10 per cent in the pay of street railway and bus employees at St. Louis. Similar reductions were made on a number of other properties, but wherever possible the necessary economies were effected by reducing hours rather than rates.

ELECTRIC RAILWAY BUDGET

Expenditures by the electric railways for extensions, betterments and maintenance were reduced to some extent. At the beginning of the year it was estimated that approximately \$350,000,000 would be spent for these purposes. This forecast, however, was based largely on the assumption that general business conditions would improve during the year. When this improvement failed to materialize, most of the railways found it necessary to trim their budgets so that the actual expenditures were probably about 5 per cent to 10 per cent below the original estimate.

TRACK MILEAGE

Substitution of buses in place of electric rail cars where traffic is light continued at a moderate pace during the past year. This was most noticeable in the communities of less than 50,000 population and in the inter-urban territory. At the beginning of the year all but two cities of over 50,000 population in the United States were served by electric railways. During the year the rail service was restored in one of these, Columbia, S. C., after a suspension begun in 1927. On the other hand the rail service was abandoned in Kenosha, Wis. in favor of service by trolley bus. In the larger cities the situation underwent no marked change. A limited number of track extensions was made, but the prevailing tendency was toward the use of buses rather than rail extensions where additional facilities were found necessary. A notable instance of this was the granting of rights for twenty bus

XIII. MANUFACTURES AND TRANSPORTATION

routes to the Brooklyn Bus Corporation, a subsidiary of the Brooklyn and Queens Transit Corporation, operating the street railways in Brooklyn.

Recognition of the advantages of coordinating the various forms of community transit has been increasing steadily in recent years. In accordance with the policy exemplified in the grant of bus rights to the street railway in Brooklyn, similar rights have been granted to the railway companies in other boroughs of Greater New York. In Chicago, also, the year just ended saw substantial progress made in the direction of coordination. The ordinance approved by popular referendum in 1930 providing for unification of street railway, rapid transit, motor bus and trolley bus operations in that city, encountered some legal difficulties, but the way appears to have been cleared now to proceed with its application. In varying degrees the same trend has been in evidence elsewhere throughout the country.

ELECTRIC RAIL CAR DESIGN

New Orders.—Comparatively few outstanding innovations were made during the past year in the design of electric rail cars. Owing to the reduced revenue of the operating companies the volume of new car buying was small. The largest order placed during the year was for 500 new cars for the Eighth Avenue subway in New York City. These cars follow the established design of underground rapid transit cars in their essentials, special attention being given, however, to facilities for rapid loading and unloading. Few large orders were placed for new cars to be used on city electric railway systems. The largest single order of the year for city cars was announced by the Capital Traction Company of Washington, D. C., in December for 35 new vehicles of light-weight design. In the interurban field the Indiana Railroad placed a million dollar order early in the year for 35 new cars especially designed for high speed op-

eration. The principal features in the design of these vehicles are the low arch roof and tapering ends to give a stream line effect. Later in the year an interesting new car design was developed for the Philadelphia & Western Railway. These cars were planned for unusually high speed operation. The ends and roofs have been tapered as a result of wind tunnel experiments. The entire underframing and superstructure is composed of light weight heat-treated aluminum alloy. Each car is equipped with quadruple 100 h.p. motors. It is expected that speeds up to 90 miles per hour will be obtained.

Research.—Research work in car design under the auspices of the Electric Railway Presidents' Conference Committee, begun in 1930, entered a more active phase during the year just ended. A field laboratory was set up in Brooklyn, New York City, where experiments were begun for the purpose of testing the advantages and disadvantages of various designs of equipment. Among the specific needs receiving intensive study are: (1) faster and smoother acceleration and braking; (2) noise reduction; (3) improved appearance; and (4) reduced construction costs. A number of the most recently built cars of electric railways in various parts of the country have been shipped to Brooklyn for the purposes of experiment. It is not expected that the results of these experiments will be to revolutionize car design and produce a vehicle utterly different from that which is being used, but rather to evolve equipment designs which are an improvement over those now in general use.

TROLLEY BUS OPERATION

Expansion.—Greater expansion occurred during 1931 in the field of trolley bus operation than in any other field of community transit. At the beginning of the year there were twelve trolley bus systems in operation in the United States with a total of 176 vehicles. Before the close of the year additional systems had been installed at Memphis, Tenn.; Provi-

dence, R. I.; Peoria, Ill.; Duluth, Minn.; Shreveport, La.; and Kenosha, Wis. Plans were announced in the fall for a complete substitution of trolley buses in place of rail cars at Fitchburg, Mass. It is expected that this change-over will be made early in 1932. Additional vehicles were purchased for operation on the trolley bus systems at Chicago. Reports indicate that a total of approximately 100 new trolley buses were purchased during the year.

Traffic Conditions.—Conditions under which trolley buses are now being operated vary widely. On Central Avenue, Chicago, the traffic carried is extremely heavy and headways are close, in the rush hour as close as 1¼ minutes. On Plymouth Road, Detroit, the traffic is very light and headways are much longer. Trolley buses in Salt Lake City operate in territories more densely populated than the Detroit route but not so heavily as that in Chicago. New Orleans, Knoxville, Brooklyn and Rockford, where installations have recently been made furnish examples of other conditions, as do the older trolley bus systems in Baltimore, Rochester, Philadelphia and Cohoes. While these various operations cover a wide range of conditions, it does not follow that the trolley bus is suitable for all conditions. Opinion of those most experienced in trolley bus operation is emphatically against that idea. The trolley bus is believed to have a definite place in the transportation picture. So also has the electric street car and the gasoline motor bus. The trolley bus is expected to achieve its maximum usefulness only when installed under suitable conditions. As the present systems are expanded and new installations are made a clearer concept will be obtained of the exact place where the trolley bus belongs in the field of community transit.

RAPID TRANSIT

No outstanding developments occurred during the past year in the

rapid transit field. Construction work continued on the new Eighth Avenue subway line in New York City and it is expected that this will be ready for operation early in 1932. As already mentioned an order was placed for 500 new cars. These are in addition to the 300 cars ordered in 1930, which have been delivered and will be ready for operation when the line is opened. Numerous proposals have been made looking to the unification of the Eighth Avenue subway with existing rapid transit lines in New York City. Objections have been raised, however, against every proposal put forward. Despite the evident advantages of unification, it has been found impossible to overcome the objections to details of the proposed plans, and no agreement has yet been reached. Outside of New York City no marked activity occurred in the field of rapid transit. Work continued on certain projects already begun, but on account of the sluggish condition of general business no new projects were undertaken during the year.

THE OUTLOOK

Despite the remarkable growth in private transportation during recent years the future prospects for public transportation in cities and the adjacent areas appears distinctly encouraging. Prior to the business depression beginning in 1930, the use of transit facilities was steadily increasing. This was the result of the drift of population from the rural districts to the urban districts, and the growing tendency for workers of all kinds to live at greater distances from their places of employment. In urban areas the use of the private automobile is becoming more and more restricted to recreational purposes, while public transportation facilities are used for regular daily travel. While the depression has caused a slight decline in the use of transit facilities, it may be expected that the upward trend will be restored as soon as general business conditions improve.

SUMMARY OF TRANSIT PASSENGERS AND REVENUES
PASSENGERS CARRIED DURING 1931

Territory Served	Electric Surface Railways	Rapid Transit Lines	Electrified Suburban Railroads	Trolley Buses	Motor Buses	Organized Taxicabs†	Total
Large cities over 500,000 population.....	4,150,000,000	2,550,000,000	250,183,000	30,669,000	654,000,000	118,900,000	7,753,752,000
Intermediate cities 100,000-500,000 population.....	2,800,000,000	None	None	9,596,000	721,000,000	109,700,000	3,640,296,000
Small cities 25,000-100,000 population.....	1,000,000,000	None	None	914,000	237,000,000	80,300,000	1,318,214,000
Total for cities over 25,000.....	7,950,000,000	2,550,000,000	250,183,000	41,179,000	1,612,000,000	308,900,000	12,712,262,000
Communities under 25,000 population.....	250,000,000	None	None	None	46,000,000*	69,100,000	365,100,000
Interurban areas.....	1,050,000,000	None	None	None	85,000,000*	None	1,135,000,000
Total for U. S.....	9,250,000,000	2,550,000,000	250,183,000	41,179,000	1,743,000,000*	378,000,000	14,212,362,000

GROSS REVENUES DURING 1931

Territory Served	Electric Surface Railways	Rapid Transit Lines	Electrified Suburban Railroads	Trolley Buses	Motor Buses	Organized Taxicabs†	Total
Large cities over 500,000 population.....	\$280,000,000	\$157,000,000	\$84,000,000	\$1,065,000	\$ 48,950,000	\$ 81,900,000	\$ 652,915,000
Intermediate cities 100,000-500,000 population.....	210,000,000	None	None	514,000	53,448,000	73,800,000	337,762,000
Small cities 25,000-100,000 population.....	69,000,000	None	None	44,000	16,542,000	52,900,000	138,486,000
Total for cities over 25,000.....	\$559,000,000	\$157,000,000	\$84,000,000	\$1,623,000	\$118,940,000	\$208,600,000	\$1,129,163,000
Communities under 25,000 population.....	\$ 15,000,000	None	None	None	\$ 3,180,000*	\$ 43,400,000	\$ 61,580,000
Interurban areas.....	104,000,000	None	None	None	12,768,000*	None	116,768,000
Total for U. S.....	\$678,000,000	\$157,000,000	\$84,000,000	\$1,623,000	\$134,888,000*	\$252,000,000	\$1,307,511,000

* In communities under 25,000 and in interurban areas the data for motor bus operations include only the service operated under auspices of electric railways.

† Includes only responsible organized companies operating taxicab fleets.

THE MERCHANT MARINE

THE MERCHANT MARINE

By PETER BAIN

EDITOR, *American Shipping*

INTRODUCTORY

Effect of the Depression.—Any survey of merchant marine affairs during 1931 must take cognizance of a world-wide economic depression throughout the entire period. With commodity production curtailed, the ramifications of distribution became less expansive; exports and imports dependent on transportation by water fell off both in quantity and value and, because of its more or less direct association, travel on both business and pleasure account shrunk correspondingly. From these disabilities, American shipping suffered as did the shipping of all other nations and, not improbably, to as great a degree as any. It was, and continues still to be, a testing time for our recently rehabilitated merchant marine, yet, if the resultant effects of the past twelve months' activities and inactivities are considered and tabulated, and a balance struck, it will be found that in most directions the margin was preponderatingly on the side of progressive achievement. Important as is commensurate revenue to make ship operation profitable, occasion may and does arise when profits shrink and finally give place to losses of greater or lesser magnitude. The year provided just such an occasion, yet out of it emerged but one major casualty—a temporary crippling of the United States Lines—an achievement, surely, because highly creditable to our entire merchant fleet and, more notable still, because of that unit's since reconstituted and strengthened ownership and administrative personnel. However, the merchant marine did much more than hold its own against the heavy odds of an industrial and transportation depression. Substantial and progressive achievement marked its broad-scope upbuilding program, constructive expression being given the vision and planning of immediately preceding

years, and still greater things visualized and planned for the years immediately ahead.

SHIP CONSTRUCTION

New Liners.—Thus, during the period, four of the greatest, most palatial, and superbly equipped merchantmen yet built in an American shipyard were under construction in 1931 or in process of outfitting and completion; two of them, the *President Hoover*, and the *President Coolidge*, for the Dollar Line Around-the-World Service going into commission. Each *President* liner is twin-screw, steam turbine-electrically propelled; of 653 ft. length, 81 ft. beam, 33,800 displacement tonnage, 23,000 gross tonnage, 15,800 deadweight tonnage; contains 67,000 cu. ft. of refrigerated cargo space, has a sea speed of 21 knots, a passenger capacity, all classes, of 1260, and carries a crew of 300. The remaining two vessels of the quartet noted above are those on order for the United States Lines, North Atlantic service between New York, the channel ports of Southampton, Cherbourg, and Hamburg. Launching of the *Manhattan*, first of the two, took place Dec. 5, her sister-ship, as yet un-named, being scheduled for a similar event early in 1932. Each vessel is 705 ft. long over all; between perpendiculars, 660 ft.; of 86 ft. beam, 12,000 deadweight tons, 30,000 gross registered tons, has a cruising speed of 20 knots, is twin-screw, steam turbine propelled, and accommodates approximately 1300 passengers in various classes. The *Manhattan* is expected to be commissioned for service in June, 1932. In addition to being the largest vessel ever built in the United States, she has the further distinction of being the first constructed here for North Atlantic service since 1897.

Contractual Additions to Fleet.

—Because of its lack of a background,

our merchant marine is to a great extent still in the establishment stage. For a good many years to come it, therefore, is incumbent that we should concentrate upon and develop upbuilding programs of a progressive character and content. At the same time, to insure a high standard of operating efficiency of vessels already in service, generous maintenance provision must not be neglected. Stressing, however, the upbuilding feature, because, after all, that primarily must furnish the needed compensation for a lack of background, it should be pointed out that delivery and commissioning of new units does not tell the whole story of any one year's contribution to our merchant fleet. Thus, the past year's contractual additions were, probably, the greatest in value, tonnage, and specialization, that hitherto have taken concrete shape; yet, the tonnage still is for the most part on shipyard ways or along-side tidewater docks outfitting and completing. In a word, it takes months to build and equip ships of the size, type, class, and luxuriousness, that service competition demands. It may be said, however, that 1931 was probably as fruitful in contractual additions to the merchant marine as it was in deliveries and commissionings of new ships. Hence, during the ensuing twelve months or thereabout, all of the vessels already contracted for and in various stages of construction may be expected to take their places on specific trade routes, not only as high ranking units of our merchant marine structure but, comparatively as well, in that of world shipping at large. Outline descriptions of the vessels referred to are as follows:

United Fruit.—Six ships, each of 11,000 displacement tonnage, 447 ft. long, steam turbine-electrically propelled, 18 knots speed, with accommodations for 120 passengers, for operations by the United Fruit Company, between New York and Central and South American ports. Two of the ships—the *Talamanca* and the *Segovia* were launched in 1931.

Matson Line.—*Mariposa*, *Monterey*, and *Lurline*, for the San Fran-

cisco-Australian passenger and freight service of the Matson Line. All three vessels will be commissioned in 1932, starting with the *Mariposa* in January. Leading particulars of the trio are: Over-all length, 632 ft.; beam 79 ft.; displacement tonnage 26,000; top speed 20½ knots; accommodations for 475 first class and 230 tourist class passengers, and crew personnel of 390. The *Mariposa* was launched in July and the *Monterey* in October.

Panama Mail and Grace.—Four ships of 19 knots speed, 508 ft. long, geared steam turbine driven, each accommodating 222 first class and 64 third class passengers, for the Panama Mail Steamship Company and Grace Steamship Company services between New York and Pacific Coast ports, by way of the Panama Canal.

Eastern Steamship and Columbian Mail.—Two ships of approximately 10,000 tons displacement, 20 to 22 knots speed, twin-screw, single-reduction-geared steam turbine-propelled; of 403 ft. length, freight carrying capacity of 158,900 cu. ft.; accommodating 756 passengers and 178 of a crew, for the Eastern Steamship Lines service between New York and Yarmouth, N. S., and Boston and St. John, N. B. Initial voyages of these vessels are scheduled for May and June, 1932. Two ships of 5,400 gross tons for the Columbian Mail Steamship Corporation.

Seatrain.—Two ocean mail ships of 8,445 deadweight tons, 473 ft. long, equipped with geared turbine propelling machinery and of 15 knots speed, for Seatrain Lines, Inc.; to be employed between New Orleans, La., Havana, Cuba, and other foreign service.

Tanker construction is represented by four vessels of 9,000 gross tons each for the Motor Tankship Corporation. Of interest too is the launching last Fall of the Coast Guard cutter *Cayuga* of 2,000 tons displacement, 17½ knots speed, 250 ft. length, and steam turbine-electrically propelled.

VESSEL COMMISSIONINGS

Of last year's new and rebuilt vessel commissionings and service entries,

aside from the *President Hoover* and *President Coolidge* already referred to, those of combined freight and passenger type predominated, the emphasis being in most cases on the freight feature. They are briefly as follows: *Borinquen* of 7,000 gross tons, 429 ft. length, and 16 knots speed, for the New York and Porto Rico Line. *Excalibur*, *Exochorda*, *Exeter*, and *Excambion*, each of 9,350 gross tons, 475 ft. length and accommodating 152 first class passengers for the Export Steamship Corporation's North Atlantic, Mediterranean, and Black Sea ports service. *Florida*, of 4,923 gross tons, 388 ft. length over all, cargo capacity 83,700 cu. ft.; passenger accommodations, 612 first class, 130 second class, for the Peninsular and Occidental Steamship Company service between Florida ports and Havana, Cuba. *Delnor* and *Delsud*, first two of six Hog Island freighters rebuilt and converted into fast passenger and mail liners for the Mississippi Shipping Company service between New Orleans and principal ports of each coast of South America. Reconstruction and entry into service of 5 steam turbine driven fast freight, mail and passenger vessels, 506 ft. length and 15,000 tons displacement, for the Baltimore Mail Steamship Co. service between Baltimore, Hampton Roads, Havre, and Hamburg. Two Lakes and barge canal freighters of 300 ft. length, 1,800 tons cargo capacity, twin screw, geared turbine driven for the Ford Motor Co.

AMERICAN FLAG LINES AND SERVICES

The World War came at the close of a period of nearly 100 years during which American foreign trade carried in American vessels had steadily declined from more than 90 to less than 9 per cent. and vessels flying the stars and stripes had almost disappeared from the high seas. The few American flag ships which continued to engage in our foreign commerce were to be found in trade with the nearby Caribbean countries or operating over the more heavily traveled sea lanes between the United States

and Europe or the Far East. By the citizens of the remainder of the world our flag was rarely seen. In those days an American traveler or shipper had but to point to the lack of American flag services for a valid excuse for the use of vessels of other nationalities. This condition has changed. A glance at the Trade Route Map issued by the United States Shipping Board, Bureau of Research, discloses that American flag lines have sailings from 16 Atlantic coast ports, 18 Gulf ports, and 29 Pacific ports, while the network of lines and services extending from these ports have termini in practically every important foreign and non-contiguous port in the world.

THE NEED FOR A BETTER BALANCED FLEET

So far, development of our merchant marine has centered largely if not almost wholly on passenger liners, the building and operation of which are, by Acts of Congress, provided with compensatory advantages. The tendency, therefore, is toward an ill-balanced fleet. This disability arises from the circumstance that aid of no kind is available for the construction and operation in foreign trade services of what are designated simply as cargo ships, or as cargo liners. The distinction between the two classes is that of greater speed in favor of the latter. To secure intelligent action towards legislative aid through Congressional enactment, it is essential that a detailed analysis be made of each ship line now operating in foreign trade, with a view to establishing what further requirements are, as to number, type, and speed, of ship, to the end that such line continue in service as an element of a permanent merchant marine. It is understood that the Shipping Board has been making such an analysis. Only upon facts so ascertained can intelligent recommendations be formulated and made as to the kind and quantity of aid necessary for the replacement of our cargo fleet. Not only are these cargo ships necessary to create a merchant fleet to meet the requirements of the United States,

XIII. MANUFACTURES AND TRANSPORTATION

but they are essential as naval or military auxiliaries as declared in the Shipping Act of 1916 and in the Merchant Marine Acts of 1920 and 1928. If aid be not granted, they will not be built at all, or will be built abroad and will probably be operated under foreign flags.

THE GREAT LAKES FLEET

American flag vessels make up 80 per cent of the number and 85 per cent of the tonnage of Great Lakes vessels of 2,000 gross tons and over. Requirements of the Great Lakes commerce are more uniform than in ocean-going trades; thus, the vessels are more uniform in type and size, and show fewer fluctuations in number and tonnage. The fleet includes 419 freighters, 20 combination passenger and freight vessels, and 5 tankers—444 in all, of 2,350,167 gross tons. Average per vessel was 5,300 gross tons, the range being between 2,000 and 10,000 gross tons.

SHIP OWNERSHIP

Although American flag merchant shipping is still of two-group ownership—government-owned and privately-owned—it is of interest to note that holdings of the former total but 394 vessels as compared with a total of 2,546 when control was first vested in the United States Shipping Board. During the last fiscal year, 73 vessels were sold by the Shipping Board for a cash price of \$1,088,680 and, of its 394 vessels only 138 were in active service. Naturally, relinquishment of government holdings operates to bring about a proportionate increase in private ownership tonnage, this, of course, aside altogether from the obvious supplement to the latter arising from new construction and deliveries. No new construction is being undertaken by or on behalf of the Government. Of 1,734 American ships of 1,000 gross tons or over, 1,341 of them aggregating 7,200,000 gross tons were privately owned. This compares with government-owned tonnage aggregating only 2,200,000 gross tons. Government-owned tonnage is scheduled to be disposed of to private interests just as

rapidly as possible and under conditions not inconsistent with good business practice.

GOVERNMENT AID IN CONSTRUCTION

Contributing perhaps more than aught else to the development and upbuilding of an American merchant marine are the construction and mail contracts aid furnished in accordance with the Jones-White Act, on the one hand, and, on the other, through the Postmaster General under the provisions of the Merchant Marine Act of 1928. During the last fiscal year, advances on construction loans totalled \$28,704,786.65. This compares with \$20,384,100 for the 1930 period. Last fiscal year, construction contracts were placed for 16 sea-going commercial vessels of approximately 122,000 gross tons, while 19 vessels of 166,000 gross tons were delivered. Ocean mail contracts signed since passage of the Merchant Marine Act of 1928 stood at a total of 44, all of them based on positive or conditional requirements for the addition of 69 new vessels to our privately owned merchant fleet. Five completely rebuilt vessels are included in the total. Mail contract assignments refer also to betterments or substitutions affecting 52 ships. Estimated cost of new fleet additions was \$300,000,000, and that of betterments or substitutions about \$12,000,000.

PERSONNEL MAINTENANCE AND PROVISION

During the past fiscal year, the Sea Service Station placed 442 young Americans, ranging in age from 18 to 23, on American ships. The future careers of these boys depend entirely upon themselves, for they are advanced in rank as rapidly as they show proficiency in the lower ratings, the records disclosing that many of them in time reach positions of the highest responsibility in the merchant marine. A further contribution in the direction of training young Americans for a sea career took the form on Sept. 18th last of the transfer from the Navy Department to the New York State Merchant Marine Acad-

emy of the new training ship *Empire State*, which is not only our ranking schoolship but bears the added distinction of being the finest of her class in the world. The vessel is 401 ft. long, of 54 ft. beam, and of 11,450 tons normal displacement.

LEGISLATIVE RECOMMENDATIONS

Taking cognizance of conditions and developments meantime disadvantageous to the welfare of our merchant marine, the Shipping Board, as required by law, has formulated a number of recommendations for the attention of Congress. Among these are: Enactment of legislation to provide additional regulatory authority over common carriers by water, on the ground that legislation of this nature is particularly needed in respect to jurisdiction over minimum rates, and in respect to the restriction of common carrier services operated by private industries, or by companies owned or controlled by such industries. Amendment of the coastwise laws, with a view to making it unlawful for ships of foreign flag to engage in so-called "voyages to nowhere," voyages originating at ports of the United States and terminating there without touching at a foreign port. Other recommendations relate to the award of ocean-mail contracts to purchasers of Shipping Board Services; revision of mail pay schedules to provide higher rates for ships of super-speed; deductions from taxable incomes in cases where operating profits are devoted to new ship construction in American yards; transfer to privately-owned ships of the peace-time business handled by Army and Navy transports and by the Government-owned Panama Railroad Steamship Line; aid for various classes of ships not now benefited by mail contracts; establishment of free ports; and ratification of the London Convention on Safety of Life at Sea; the latter now long overdue.

SHIP COMPANY CHANGES

American Diamond Lines.—Two important developments in the sphere of vessel ownership marked what ap-

pears to be a long step forward, comparatively, towards realization of our merchant marine objective. Contract covering the sale of the American Diamond Lines to the Black Diamond Steamship Corporation of New York was signed Sept. 18. The Black Diamond Corporation has been managing operator for the service since 1924 and, under its management, the line has been developed to the point where it could be transferred to private ownership. Conclusion of the negotiations incident to the sale was reached after satisfactory arrangements for the maintenance of an ocean mail route had been completed between the Black Diamond and the Post Office Department. The line will be operated under a mail contract providing for substantial improvement in the character of vessels maintaining service. Contract price of the line was \$1,660,181.25. The line consists of twelve typical ten-knot cargo vessels with an aggregate tonnage of 102,165 deadweight. Under the contract of sale, the owners will be required to make not less than 72 round voyages a year, of which 24 will be semi-monthly sailings from New York to Rotterdam, 24 will be semi-monthly sailings from New York to Antwerp, and the balance will be semi-monthly sailings from North Atlantic ports of the United States other than New York to the foreign ports named. A new holding company has been formed to own the properties of the American Diamond Line. Authorized capital is \$2,000,000, of which, paid-in cash amounted to \$1,200,000. The Black Diamond Steamship Corporation, as a subsidiary, continues to operate the Line for account of the parent company.

United States Lines.—As of Dec. 4, the United States Lines passed from the P. W. Chapman interests through the Shipping Board to the Roosevelt Steamship Company and the United States Lines Company of Nevada, the latter constituting the holding corporation. Expansion of our merchant marine on a scale hitherto unattempted is believed to be imminent as a result of the deal,

XIII. MANUFACTURES AND TRANSPORTATION

a not unlikely first move being in the direction of construction of two superliners of *Leviathan* size and class, but certainly speedier. The properties controlled include a fleet of 181 ships of 1,192,227 tons representative of an investment of \$110,000,000. The new owners as listed are P. A. S. Franklin, chairman of the board; Kermit Roosevelt, president, and John M. Franklin and Basil Harris, vice presidents of the Roosevelt Steamship Company; R. Stanley Dollar, president of the Dollar Steamship Company; Kenneth D. Dawson, president of the State Steamship Company of Portland, Ore.; William Humphreys, chairman of the board of the Associated Oil Company, and believed to be the representative of the Fleishhacker banking interests of San Francisco, and George Hinkins, general manager of the Dollar Line in New York. A new house flag run up on the *Leviathan*, the flagship, marked officially the transfer of the fleet to its new owners.

Operation Profits and Factors.—

In retiring from the shipping business, the Chapman interests did so with one of the best financial showings of any steamship company during the past year. Up to November, the United States Lines fleet showed an operating profit of \$144,000, or an improvement of \$297,000 over the first eleven months in 1930. The American Merchant Line, a subsidiary company, had an operating profit of

\$1,132,000 as compared to \$850,000 last year. Much credit for this financial improvement was due to the fact that the company was permitted to turn back the *America*, *George Washington*, and *Republic* to the Shipping Board. These three liners, which in their day were rated among the crack ships on the North Atlantic, were obsolete a few years ago; thus efforts of the Chapman interests to operate them caused heavy losses. It may be inferred that changes carried out in the structural arrangements of the United States Lines flagship *Leviathan*, and her subsequent re-measurement for tonnage rating, were not unassociated with a desire to economize on port dues. Since reconditioning and entry into service in 1923, the *Leviathan* has laid claim to being the biggest merchant ship at any time in service. The claim was based on a gross tonnage of 59,956 and a net of 27,696 tons, as against a gross tonnage of 56,551 and a net of 26,370 tons for the *Majestic* of the White Star Line. The *Majestic's* length is 915.5 ft. and that of the *Leviathan*, 907.6. Due to her rearranged structure and remeasurement, the gross tonnage of the *Leviathan* is now 48,590, and the net, 15,801 tons. An estimated saving of \$40,000 annually in port dues is expected, assuming a normal year's voyages as a basis. Port dues at New York and Southampton are respectively 30 cents and 12 cents a net ton per voyage.

PROGRESS IN AERONAUTICS

BY LESLIE E. NEVILLE

MANAGING EDITOR, *Aviation*

GENERAL

Traffic.—As 1931 closes, the aviation industry, disillusioned after the boom of 1928-1929, has made an accounting and found encouragement. During the first nine months, the air transport services showed a steady and almost phenomenal increase in patronage and miles flown, a record standing out in bold relief against the

losses in passenger traffic of the railroad and steamship lines. One of the most promising indications is a tremendous increase in poundage of air express carried by airlines through the country. Late in December there was a drastic reduction in air express rates which should produce even greater increases in poundage. According to figures furnished by the

Aeronautical Chamber of Commerce, passenger traffic on railroads and steamships showed a drop of from 18 to 44 per cent respectively while air transportation showed a six per cent increase in passengers carried and a 47 per cent increase in miles flown during the first nine months of 1931 over the corresponding period in 1930. The increase in air express poundage over the same periods was 212 per cent.

Production.—The aeronautical production picture is somewhat different. If it were possible to neglect the period from the end of 1927 to the beginning of 1931, the figures would show a steady increase in number of planes built. The abnormal conditions of the boom period, however, interrupted steady progress, and the industry finds itself in approximately the same production position as in the first quarter of 1928, with some prospect of a steady and normal increase. The proportion of the produced aircraft actually sold in 1931 is infinitely greater than in 1929.

Competitive Fares.—Airline fares have remained constant in most cases at a mileage rate slightly higher than that of the railroads. In other cases, particularly those of the new independent operators, fares have been materially reduced to compete with parallel rail operations and existing airlines. In some sections of the country, drastic fare reductions have virtually amounted to a rate war, while other forms of competition such as high speed services have been thrown into the balance without reduction of fares. At the end of one year of operation, one of the independent airlines, operating without benefit of an air mail contract, and in competition with an air mail contractor and one of the best established railroad systems, has shown a small profit.

Operation.—More than 160,000 miles are being flown daily by something over 40 mail and passenger operating companies, over routes covering a combined length of approximately 61,000 miles. Aside from the transport field, there is a considerable

group of airplanes used in aerial taxi, touring, photography, and miscellaneous services, including seeding and crop dusting. The general business depression and the reduction of income in 1931 resulted in a curtailment of private operation of airplanes and pleasure planes, and the market for private airplanes has been very materially reduced.

FLIGHT FACILITIES

Lighting.—At present there are some 17,500 miles of airways fully equipped for night flying by the Federal Government, in addition to about 900 miles of lighted airways provided by the State of Pennsylvania, and an individual transport operator. There are 378 lighted and 28 unlighted intermediate landing fields. The Federal Airway System embraces 1,934 flashing or revolving beacons, and there are 225 certified private aeronautical lights provided and operated through other sources.

Weather Service.—The number of weather stations operated by the United States Weather Bureau has increased, and radio telephone reports are broadcast at intervals, providing pilots with local conditions for the various areas. There are somewhat more than 200 weather stations, as well as a large number of auxiliary weather bureaus and Department of Commerce airway stations, and approximately two score upper airway offices. These stations are all interconnected by radio telephone and telegraph, and in addition to these a number of privately operated stations have been installed by the airlines to provide two-way communication between stations and their planes. The Federal airway teletype system has been extended by 4,094 miles.

Radio Beacon.—Radio beacon development continues, and the facilities provided for radio in air navigation have increased in number and improved in quality. Multiple course beacons are among the interesting developments in this important branch of transport activity. Tests are being made on a new electrical device, consisting of subterranean cables at the

XIII. MANUFACTURES AND TRANSPORTATION

airport, energized by high frequency alternating current. Waves emitted from these cables react on the plane radio set in such a way as to guide the machine directly to the landing area through a combination of audio and visual devices, invaluable in blind landing in fog.

AIR ROUTES

More than 50,000 miles of air routes are being operated, covering about 160,000 miles daily. The Watres Air Mail Act has made itself felt, and has contributed to the development of passenger transport although it has been necessary to scale down rates to satisfy the demand for governmental economy. Domestic air mail has increased in volume, and new contracts have been made for foreign mail. The present trend, as a result of the Watres Bill, is toward combined passenger and mail airplanes for day schedules, and special mail airplanes for night schedules, or other runs where passenger carrying would be impractical.

AIRPORTS

Commercial airports have increased from 558 to 601, the municipal airports from 500 to 577. These are, of course, in addition to those of the Army, Navy and Department of Commerce. The Department of Commerce has undertaken the installation of complete landing field and lighting equipment on approximately 3200 miles of airways, over which contract air mail and passenger service is in operation. It has also established intermediate landing fields and other aids for daylight operation on over 1000 miles of airways, and has commenced surveys for lighting installation during the present fiscal year, of approximately 2000 additional airway miles.

AIR MARKING

Through the cooperation of municipalities, corporations, and other organizations, airways and airports are becoming more effectively marked, and a large number of more important cities and towns have provided guides to aviators. This applies not

only to markings for day operations, but to floodlighting or obstruction lighting, and even in some cases the provision of beacons for night operation. Progress is also being made in providing adequate obstruction lights for towers and other menaces to aerial navigation.

LICENSES AND PERMITS

Department of Commerce figures show 17,603 licensed pilots on the active list, and 13,349 valid student permits; both of these figures show a substantial increase over the previous year. 10,362 aircraft were licensed for private use, and up to Dec. 1, 455 airplane designs and 75 engines had been approved for production by the Department. Increases in the number of these approved type certificates have not been as great as they were before 1930.

TECHNICAL DEVELOPMENT

Federal and commercial agencies are continuing well-organized research programs on airplanes, engines, accessories, and aids to aerial navigation. This results in continually increasing efficiency and a natural tendency towards lower cost of operation. Virtually nothing has been done in the lighter-than-air transport field, but some very interesting research work is being conducted in this direction. The year marks the completion and formal acceptance by the United States Navy of the *U. S. S. Akron*, largest lighter-than-air craft in the world, embodying many design improvements over the *Los Angeles* and *Graf Zeppelin*. One of the outstanding improvements in the *Akron* is the shaft drive for the propellers, permitting an engine location within the envelope rather than in gondolas as in previous airships. The possibilities of this type of power transmission for aircraft has interesting possibilities, and some designers look forward to inboard engine installations with forced cooling for heavier-than-air machines. An experimental non-rigid airship, *K-1*, completed by the Navy is 50 per cent larger than any built since the war. It was designed for experiments with a fuel gas contained

in a ballonet completely surrounded by helium.

AIRCRAFT TYPES

The Biplane.—For passenger transport and touring, the monoplane continues to be the preferred type, but there is a difference of opinion on this subject, and biplanes are being used on several transport lines because of their undeniable advantage of greater wing area and lower landing speed. The question of single or multi-engined transport line equipment is far from settlement, and both sides have strong adherents. Flying boats and amphibians are not finding the expected acceptance largely because of their decreased carrying capacity, as compared with land planes in similar weight classes. There has been somewhat of a revival of the post-war type of two- or three-place biplane because of the partial return of the demand for airplanes for general use. Newer machines of this type, however, are equipped with more powerful engines than those of the post-war period.

The Monoplane.—Multi-engined closed monoplanes are used extensively by the transport operators while single-engined machines of this type are used to a great extent in business services. A trend continues toward increasing the luxury of appointment, and it is rumored that a transcontinental sleeper plane service is soon to be inaugurated. The demand for increased schedules or more frequent transport service has given rise to the question whether it is desirable to operate a large number of small units, or a small number of large units. In 1931 there was a tendency toward the smaller units, particularly on the relatively short lines. On the other hand, this year marks the completion of the world's largest amphibian which is built to accommodate 40 passengers, and a large quantity of mail and baggage. Two of these machines are to be put into Pan-American services. A land machine having a capacity of 30-40 passengers is under development by the Ford Motor Company.

AUTOGIROS

This radically new type of aircraft has been developed in this country through the efforts of Harold Pitcairn, and is the original invention of the Spaniard, Juan De La Cierva. During 1931, research work was completed on this type, and commercial production was started. The machine is still under development, and is to be produced by three companies under license. It has been well received by the public, mainly because of its ability to descend vertically, and for other safety and stability characteristics. A different type of autogiro embodying feathering instead of articulated vanes, is also under development by E. Burke Wilford. Successful helicopter flights were made in Spain and Italy, and development of the Curtiss-Bleecker helicopter continues in this country.

AIRCRAFT SPEED

Commercial aircraft speeds, as well as those of military machines, are being increased along with other performance factors, and average cruising speed of commercial machines is probably well over 100 miles per hour with present day equipment. Much greater speed has been obtained over short periods in smaller machines of highly refined design, and the greatest speed yet attained by any machine was that of the Schneider Trophy winner in test runs after the race. In these runs 408.8 miles per hour was obtained. A land plane record of 284.7 miles per hour also was made late in the year in Detroit. Design progress, however, continues to increase the speed and performance of commercial machines by aerodynamic refinement, rather than increase horsepower available. One of the recent steps in this direction is the provision of landing gear retractable in flight. Elimination of the parasite resistance of the landing gear frequently makes it possible to add as much as 15 miles per hour to the top speed of an airplane. The cantilever type of landing gear has been developed also because of its relatively low resistance. Advances are also being made in in-

creasing the proportion of gross weight that may be applied to useful load carrying in a given design.

AERODYNAMICS

Research and Tests.—Continued consideration is being given to the theoretical aspects of aeronautical engineering comprising chiefly aerodynamics. New equipment valued at more than \$1,000,000 has been installed at the research laboratories of the National Advisory Committee for Aeronautics, where stability, controllability and spinning characteristics, are being investigated in great detail. A wind tunnel, large enough to accommodate a full scale airplane, thus eliminating the errors due to scale effect, has been installed, and a modern towing basin is now in operation to test the characteristics of seaplane hulls and floats. The research knowledge gained as a result of the Gugenheim Safe Aircraft Competition, has been somewhat slow in finding application, but it is probable that some of the aerodynamic developments brought to life in this contest will some day be applied to aircraft. Two types of propellers with pitch variable in flight have been introduced and are commercially available, and others are in their late experimental stages.

Air-cooled Engines.—The air-cooled engine continues to be the preferred power plant for commercial service, although a limited number of the transport machines are equipped with water-cooled power plants. Constant progress is being made in increasing the horsepower output of these designs, particularly by the use of sea level supercharging, and mechanical engineering is showing the way toward increasing impeller drive ratios and impeller speeds while retaining reliability. Military planes, however, utilize water or liquid-cooled power plants to a very great extent and liquid cooling is constantly under development. Reduction of radiator area to zero has been accomplished in an experimental engine by the Navy Department. In this power plant, the cooling system is of

the thermo-syphon type, and consists only of sealed jackets around the cylinders and other parts of the engine.

The average airplane for private use is powered with an engine of 200 to 300 horsepower, and a number of new power plants have been designed having outputs in the neighborhood of 100 horsepower, to replace the war surplus engines, most of which have disappeared. Vertical and inverted-in-line engines have been increasing in use, particularly in the lower horsepower ranges. During the height of interest in the light plane, early in the year, a number of two-stroke-cycle engines were designed and made available for commercial use. Many of these have disappeared with the light planes, but a limited number have survived, and are still being used. Important progress has been made in the refinement of the Diesel engine introduced in 1930. Advances have been made in the development of fuels for gasoline engines.

Radiators and Propellers.—The problem of radiator location for liquid-cooled engine is still important, but has come close to solution in some of the latest military designs. Reduction of radiator resistance has been accomplished to a very great extent. Aluminum alloy propellers are still used almost exclusively in transport machines, while wooden ones are occasionally furnished as equipment in a few private planes. Successful hollow steel and magnesium alloy propellers have been developed and introduced during the past year, but have not yet come into general commercial use. It was planned to combine propeller and muffler by providing incisions in a hollow steel blade and forcing exhaust gases through these incisions. This experiment has not yet reached the commercial stage. The problem of aircraft noise is being considered more and more, and several excellent mufflers have been developed. These devices, while they silence the exhaust noises effectively with a minimum of back pressure, do not eliminate the propeller noise which amounts to the large proportion of the total. A ven-

turi air-cooled exhaust is under development by the N. A. C. A. The use of low resistance cowling for radial air-cooled engines has become almost universal, but wheel fairings have been looked upon with some disfavor because of the maintenance problems they involve.

CONSTRUCTION PROGRESS

Material.—Metal is gradually gaining over wood in airplane construction, but wood is still frequently used for the structures of wings. Fabric covering continues to be used extensively, although sheet metal covering for wings is sometimes employed. There has been a trend during the year toward the all-metal monocoque fuselage structure which is a type of construction in which the metal skin or covering bears a certain proportion of the stresses or loads in the structure. While the usual practice in the fabrication of airplanes is oxy-acetylene welding for steel, and riveting for aluminum alloy, there has been some progress made in electric spot welding of stainless steel in airplane construction.

Accessories.—Mechanical or hydraulic brakes are being used on many types of airplanes, except those used primarily for training. Low-pressured tires are still used extensively, but fewer efforts are being made to eliminate the landing gear shock absorber mechanism and depend entirely on the tires to absorb landing shocks.

Instrument Research.—Airplane instrument refinement continues, and electricity continues to play an important part in the development of remote indicating devices. Pilot fatigue is being continuously reduced by more rational arrangement of instruments on panels, and more logical design and arrangement of instrument dials. An automatic pilot which keeps the airplane on a predetermined course, and requires no attention from the pilot, unless some modification of the course is desirable, has been tested on commercial transport planes, and is shortly to be adopted as regular equipment. The

arrangement is a development of the device of the same general type used on ocean vessels.

GOVERNMENT AIR AGENCIES

Post Office Department.—The first air mail service in the United States was inaugurated by the Post Office Department, which until 1927 operated the transcontinental air mail. At that time, both sections of this group were turned over to private contractors, and all such routes at present are conducted by private contractors through the Post Office Department.

The National Advisory Committee for Aeronautics, composed of 15 members appointed by the President, is charged with the duty of the subdivision and direction of the scientific study of the problems of flight with a view to their practical solution, determination of problems worthy of experimental attention, and presentation of results of both experimental and scientific work for the advancement of, and practical application to the development of aeronautics. This organization has headquarters in Washington, and a completely equipped research laboratory at Langley Field, Virginia, and is responsible to the executive committee and various standing technical committees. Not only does this organization engage in research work in its own laboratory, but also provides for the allocation of research and particular problems by various other governmental and private institutions.

Department of State.—Aeronautical reports of the diplomatic and consular service are made available to the industry. The Bureau of Foreign and Domestic Commerce maintains commercial attachés and trade commissioners in all important countries. Reports are made available to the public, and opportunities for the sale of American aeronautical equipment abroad are brought to the attention of American firms through this agency.

Bureau of Standards.—From the beginning of flying, this bureau has made an important contribution to

the existing technical knowledge of the industry. One of the major phases of this branch of the service is the study of aircraft instruments and the verification of their accuracy. This applies not only to commercial types of instruments, but to those used for measuring the performance characteristics of airplanes engaged in record flights. It has made an important contribution to the development of the radio beacon and other air navigation devices. Other work includes a study of the existing methods of sound-proofing airplane cabins and a number of structural investigations.

The Bureau of Mines has made extensive use of airplanes in carrying rescuers and machinery from mine disasters, and for surveys and maps. It is also well known for its work in interior and research, and its plant at Fort Worth, Texas, produces the helium gas required and used in military air services.

The Bureau of the Census is concerned with a specific variety of statistics, and in its biennial census of manufactures, it includes aircraft engines and accessories.

The Bureau of Lighthouses, under the Air Commerce Act, is also engaged in installation and maintenance of lights, beacons and intermediate fields, as well as other aids to air navigation, such as the radio beacon, radio telegraph and radio telephone along the airways.

Department of Agriculture.—Aircraft of both the lighter and heavier-than-air types already have been employed by this department, to possibly a greater extent than in any other purely civil branch of the government except the Post Office, in crop-dusting and estimating fire patrols, seeding, and other work. The Bureau of Agricultural Economics has done crop reporting by airplane observation and aerial photography, and experiments have successfully demonstrated the airplane efficacy in this work.

The Treasury Department under the Air Commerce Act designates

ports of entry for aircraft, details customs men and applies the laws relating to customs and public health. Prohibition enforcement by airplane has been attempted by the Department of the Internal Revenue.

The Coast Guard.—For several years an air service has been in existence for the purpose of furthering the work of this organization, the function of which is to render assistance to vessels or aircraft in distress, give medical aid to deep-sea fisheries, and protect custom revenues, and enforce laws and regulations governing anchorage of vessels in navigable waters.

Smithsonian Institution.—Among other things, this agency has the custody of aeronautical material representing the progress of the art. It encouraged three early attempts to cross the Atlantic by air, and its auspices were largely responsible for the use of the balloons in the civil war, and for the experiments of Langley.

Patent and Design Board.—The board was created by the Army Aircraft Bill of 1926, and consisted of three assistant secretaries for air. Any individual firm or corporation may submit a design for aircraft, aircraft parts or aeronautical accessories, which were patentable or unpatentable, to the board. After favorable recommendation from the National Advisory Committee for Aeronautics, it can determine whether the use of such a design for the government is desirable and necessary, and fix value to the owner for rights.

The Committee on Aircraft and Fog Flying Research.—A final report has been issued by an official committee organized by the Daniel Guggenheim fund for the promotion of aeronautics to study the problem of fog flying. This committee also comprised representatives of the Department of Commerce, Bureau of Standards, Bureau of Aeronautics and the Navy Department, the Post Office and the Army Air Corps. Other subjects including radio beacons, capacity altimeter, field localizers, acoustic altimeter and lighting are among those considered.

THE RADIO

THE RADIO

By W. R. G. BAKER

VICE PRESIDENT, RCA VICTOR COMPANY, INC.

GENERAL PROGRESS

Technical Advances.—The radio art, which has experienced phenomenal growth and development during the past decade, continued its rapid progress during 1931. Despite severe economic conditions in this and foreign countries, the results of the year's activities showed marked technical advances in the study of high frequency, its increased utilization in the fields of communication and entertainment, and further stabilization of the radio industry as a whole. Although there were no greatly outstanding developments during the year, intensive activities in the laboratories brought out new and interesting truths concerning the generation, propagation, and reception of electro-magnetic waves. Attention was particularly concentrated on the use and behavior of the ultra-high frequencies above 25,000 kilocycles. This was due, in a large measure, to the efforts of engineers to utilize these short wave-lengths for television transmitters, which require wide bands of frequencies.

Broadcasting enjoyed a more prosperous year than other branches of the radio industry, and has reached the stage where it is self-supporting. Figures released by the U. S. Census Bureau at the beginning of the year revealed that the United States has 10,500,000 broadcast receivers in use, representing nearly half of the estimated world's total. The equipment and facilities of transmitting stations were improved, and the areas served were extended through the granting of increased power to several stations by the Federal Radio Commission. International broadcasts became more numerous and found greater popularity due to improved quality and dependability. Public interest in television increased tremendously. The National Broadcasting Company and the Columbia Broadcasting System

began active preparation for the exploitation of this new form of entertainment, the latter inaugurating scheduled visual broadcasts from its New York City station in the early summer. Indicative of the belief in the future development of radio and its associated entertainment field, was the announcement of the Radio Corporation of America of its plans to erect a group of buildings in the heart of New York City to be devoted to television and sound broadcasting studios, theatres, and laboratories, as well as offices for its own organization. This project, known as "Radio City," is to be completed in 1934, at an estimated cost of \$250,000,000.

Court Decisions.—The extensive litigation which has hampered the radio industry since its beginning was lessened, to a large extent, by several important decisions of the Courts. Perhaps the most far reaching of these terminated the suit of the General Electric Company against the DeForest Company, which charged the latter with infringement of the Langmuir patents relating to the use of high vacuum in the electron tube. After the United States District Court of Delaware had decided the patent to be invalid, the case was appealed. The Circuit Court of Appeals for the Third District reversed the decision of the lower Court. The case was thereupon brought to the Supreme Court which, in turn, reversed the preceding decision and held the patent invalid. The Government failed to win its suit against the Dubilier Condenser Corporation claiming ownership of the Lowell and Dunmore alternating current receiver patents. The basis of the claim was that the two inventors were in the Federal Service at the time the invention was made. In the case of *Lord vs. Radio Corporation of America*, the Federal

XIII. MANUFACTURES AND TRANSPORTATION

Court of Delaware found the latter guilty of violation of the Clayton Act in requiring its licensees to equip their receivers with RCA tubes. The subsequent damage suits brought against the Radio Corporation by the licensees were settled out of court.

RADIO MANUFACTURE AND SALES

Economy Measures.—The radio industry, like most other industries, felt the effect of the business depression in the fall of prices and the decreased buying power of the consumer. The manufacturers met these conditions by greatly reducing the costs of production and, at the same time, improving the quality of the product. Progress was made toward further stabilization of the industry by close control of production, thus preventing the accumulation of the large stocks which contributed to the decline of prices in 1930. There was

a tendency among manufacturers to diversify their output to include such products as refrigerators, home motion picture apparatus, laboratory equipment, etc., in order to reduce the seasonal variations in production and to increase sales.

Mechanical Features.—The popularity of the small "midget" receiver, which made its appearance during the previous year, was even more pronounced in 1931, and practically all manufacturers included this type in their line of receivers. There was also a greater trend toward furniture models, the receivers being housed in clocks, desks, tables, and the like. Phonograph-receiver combinations appeared to gain favor and several makes were equipped with automatic record-changing mechanisms. Other features were home recording attachments, auxiliary short wave receivers, and combined radio receivers and sound motion picture projectors for home use.

RADIO SALES AT RETAIL

(From survey of *Radio Retailing*)

	1930	1929
Radio Sets, factory-built (including consoles and built-in reproducers)		
Number.....	3,672,400	4,200,000
Value.....	\$298,010,000	\$525,000,000
Automobile Radio		
Number.....	34,000	
Value.....	\$ 4,519,500	
Radio-Phonograph Combinations		
Number.....	155,400	238,000
Value.....	\$ 34,188,000	\$ 67,068,000
Tubes		
Number.....	52,000,000	69,000,000
Value.....	\$119,600,000	\$172,500,000
Reproducers (excluding those in consoles and combinations)		
Number.....		800,000
Value.....	\$ 3,500,000	\$ 16,000,000
A-B-C (Dry) Batteries		
Value.....	\$ 21,514,000	\$ 30,530,000
A-B Power Units, Storage Batteries and Chargers		
Value.....	\$ 6,920,000	\$ 14,350,000
Other Accessories*		
Value.....	\$ 6,700,000	\$ 9,600,000
Parts (does not include sales to manufacturers)		
Value.....	\$ 6,000,000 (estimated)	\$ 7,500,000
Totals		
Sets, plus Automobile—		
Radio and Combinations.....	\$336,717,500	\$592,068,000
Parts.....	6,000,000	7,500,000
Accessories.....	158,234,000	242,980,000
Total value.....	\$500,951,500	\$842,548,000

* Includes aerial equipment, meters, pickups, turntables, headsets, furniture, etc.

BROADCASTING

Programs.—Radio broadcasting es-

tablished itself still more firmly as a vital influence in American life. Its

potentialities as a medium for the dissemination of news, education, and entertainment were further realized, and advertisers made increased use of this method of reaching the buying public. There was a marked trend away from long programs toward more frequent short periods. The use of electrical transcriptions—*i.e.*, complete programs recorded on special disc records—for broadcasting purposes, showed considerable growth. Many sponsors showed a preference for this type of program because it can be reproduced wherever and whenever desired.

Transmitters.—Experimental tests were continued to determine the practicability and the advantages of using high power for broadcasting stations. Station KDKA was successfully operated with a power output of 400 kilowatts at 100 per cent modulation. Several stations maintained regular broadcasts on their experimental short-wave transmitters, being received consistently in foreign countries. Synchronization of broadcasting transmitters, successfully demonstrated during the latter part of 1930, received the approval of the Federal Radio Commission. As a result stations WTIC, Hartford, Conn., and WBAL, Baltimore, which shared the same wave-length, were regularly synchronized, during certain periods of the day, with WEAJ and WJZ respectively. Chain broadcasting was materially improved with the installation of new connecting cables between studios and transmitting stations.

Receivers.—With the decision of the Radio Corporation of America in 1930 to extend to its licensees the use of the superheterodyne patents, several manufacturers went into production on this type of receiver. The circuit was adapted to the highly compact midjet receivers, as well as to the conventional console models, with an average of nine tubes being used. Automatic volume control, which tends to maintain constant volume in the loudspeaker with varying signal strength, was featured in many

receivers in the higher price ranges. A few models were equipped with remote control attachments, making possible tuning and control of volume at one or more points away from the receiver. Tone control, introduced in 1930, by means of which the listener can adjust the relative strengths of the high and low frequencies to suit his individual taste, was used more generally in the larger console models and in a few of the mantel type receivers of 1931. Other features were visual tuning indicators, electric clocks, and twin loudspeakers.

Battery receivers were considerably improved through the use of the new 2-volt low current tubes, and the application of the "Class B" amplifier which makes possible approximately nine times the undistorted power output obtained from the ordinary amplifier with equal power consumption. Thus, listeners in rural areas not supplied with electric power, are able to get reception which is comparable to that of the modern alternating current receivers. The demand for automobile receivers increased to some extent, though they did not constitute a large percentage of the year's sales. Short-wave converters also brought appreciable sales.

Centralized radio receivers came into greater use in schools, hospitals, hotels, and ships. One of the new hotel installations allows the listener to choose between six programs by merely turning a knob on the loudspeaker in his room. Systems were developed by means of which a single antenna (with amplifiers) could be used to supply signal energy to several hundred broadcast receivers. They are particularly suited to apartment dwellings.

Tubes.—The screen grid power detector found more widespread application, as did also the screen grid amplifier. The pentode, or five-element tube, designed to eliminate the effect of secondary emission from the plate, and introduced to the industry in 1930 as a high gain amplifier, was used extensively as a power tube in the output stage of 1931 receivers,

singly and in push-pull. One of the important additions to the tube family was the "variable-mu" tube which, by its construction, gives a changing amplification factor for large variations in signal voltage applied to the grid. This tube, which is a modification of the screen grid type, reduces cross-talk between stations and modulation distortion in strong local signals. It is particularly adapted to automatic volume control. Other new tubes were the 2-volt group, designed for battery receivers in which low current consumption is necessary, and a line of 6-volt tubes especially designed for automobile receivers.

VISUAL BROADCASTING

Television.—Development in television was carried on with increased activity during 1931, and several firms placed apparatus on the market. Demonstrations were received with enthusiasm and there was general optimism regarding the future of this new medium for the transmission of intelligence. In July the Columbia Broadcasting System inaugurated its 500-watt television station W2XAB in New York City, operating on a frequency of 2750-2850 kilocycles. The National Broadcasting Company started the installation of a transmitter atop the Empire State Building.

Facsimile.—Radio facsimile transmission was further extended and adapted to the needs of ships and aircraft. This form of communication lends itself admirably to the transmission of maps, photographs, and similar material. Installations were made on ocean-going vessels which enabled passengers to read facsimiles of daily newspapers almost as soon as copies were available on the streets. An installation was made on the Navy dirigible *Los Angeles*, and similar equipment was contemplated for other aircraft. Facsimile circuits were established between New York, Berlin, and London.

COMMERCIAL COMMUNICATION

The United States strengthened its position as the world's leader in radio

communications. Additional code circuits were established with foreign countries, one of the important links being that between San Francisco and Mukden, China. Short-wave communication became more dependable with the use of "diversity reception," a method employing three antennae spaced about 1000 feet apart. This system proved successful in counteracting fading which has long been a menace to reception. An agreement was reached between RCA Communications, Inc., and the Western Union Telegraph Company whereby the facilities of each were made available to the other. Radio telephone service was established with the island of Sicily and the Canary Islands, and construction of facilities was under way for similar service to Bermuda and the Hawaiian Islands. In April the International Telephone and Telegraph Company accomplished successful two-way radio telephone beam transmission between Dover and Calais, on wave-lengths as low as 10 centimeters and with a power input to the antenna of $\frac{1}{2}$ watt. A combination of semi-spherical and paraboloidal reflectors was used to direct the beams. Plans for similar tests in this country were made. Several radio telephone transmitting and receiving stations, employing wave-lengths of 5 to 9 meters, were installed in the Hawaiian Islands for inter-island communication. Waves propagated at these ultra-high frequencies apparently are not reflected by the Heaviside layer, which made it necessary to place the stations on high elevations in order to obtain "line of sight" transmission.

MARINE RADIO

Since its invention, radio has become more and more valuable to ships at sea. Improvements in and greater use of direction-finding apparatus, by means of which the position of a vessel can be accurately determined, marked the past year. The Navy, alert to improving its communication equipment, adopted the alternating current superheterodyne receiver for ship's use.

AIRCRAFT RADIO

The giant Navy dirigible *Akron* was equipped with the most complete and powerful radio equipment ever installed on an aircraft. Two of its three receivers are used for high frequency and intermediate frequency respectively. The third constitutes a part of the ship's direction finding equipment. Battery operated combination transmitters and receivers, using frequencies of 45 to 60 megacycles, and weighing about 9 pounds (exclusive of batteries), were developed for airplane communication.

GOVERNMENT REGULATION

By means of its monitoring station, located at Grand Island, Nebraska, the Department of Commerce was able to obtain a check on the frequencies transmitted by broadcasting stations throughout the nation. The Federal Radio Commission issued an order effective June 22, and for one year thereafter, requiring all broadcasting stations to maintain their assigned frequencies between limits of plus or minus 500 cycles. An earlier order, effective Jan. 31, 1931, stipulates that all broadcasting stations must transmit signals modulated at least 75 per cent. The Commission reserved the following frequencies for television transmission: 2,100-2,200 kc.; 43,000-46,000 kc.; 48,500-50,300 kc.; and 60,000-80,000 kc.

AMATEUR RADIO

The amateur operators continued to do commendable work in the handling of messages as well as experimentation in transmission and reception. Through the use of the higher frequencies, greater transmission distances have been obtained and amateur radio has assumed more of an international aspect. A noteworthy feat, indicative of the proficiency of the amateur organization, was the relaying of a message from a station in Indiana all the way around the world and back to the originating station in the short time of 44 minutes. The amateur operators aided materially in the dissemination of

news and the expediting of relief during the Nicaraguan disaster.

ALLIED PRODUCTS

Sound Pictures.—The growth of sound motion pictures continued at a rapid pace. Reductions in the prices of apparatus and the public's great partiality to pictures with sound have caused the majority of the small theater owners to install modern equipment. The introduction of the all a-c. operated reproducers has simplified operation and decreased maintenance costs. The progress made in the technique of sound reproduction was evident in the improved quality of the synchronized sound. Important developments were made in recording, which almost entirely eliminated "ground noise" caused largely by scratches and foreign particles in the transparent portion of the film sound track. Motion pictures with synchronized sound for home use were extensively developed, and apparatus was placed on the market by several manufacturers. Preparations were made for the production and distribution of films to be used with such equipment.

Phonographs.—In the field of phonograph reproduction, the most important development was undoubtedly the long-playing record which allows the recording of a complete symphony on a single disc. This was accomplished by decreasing the turntable speed from 78 revolutions per minute to 33 1/3 revolutions per minute, and by doubling the number of grooves per unit of radius on the record disc.

Musical Instruments.—Considerable progress was made in the development of musical instruments in which the sounds are produced by electrical means rather than by the use of the conventional vibrating strings or resonating pipes. The electron tube has made possible most of these devices. Electric chimes, producing sounds which, to the ordinary ear, are not distinguishable from those of cast bells, have been very successful. Such a carillon has only a fraction of the weight and space

XIII. MANUFACTURES AND TRANSPORTATION

requirements of its mechanical predecessor.

Photoelectric Tubes.—The photoelectric tube, often termed the "electric eye," found many new applications in devices for counting, sorting,

measuring, or timing; in television, and in systems for controlling ventilation, heat, or illumination. It has passed the novelty stage and established its worth as an accurate, sturdy, dependable servant.

STATISTICS OF MANUFACTURES

By LEVERNE BEALES

CHIEF STATISTICIAN FOR MANUFACTURES, U. S. BUREAU OF THE CENSUS

PRODUCTION ANALYSIS OF 1929 CENSUS

Gross and Individual Output.

The last census of manufactures reported not only a greater gross production but also a greater production per wage-earner in 1929 than in any prior census year. The peak attained in 1929 is shown by the table below. In only one index, that of wage-earner employment in 1919, did the 1929 figures fail to exceed those of any earlier census year. The increase in output, accomplished with a much smaller increase in man-hours, raised the production per wage-earner 62 per cent above the level of the beginning of the century.

INDICES OF PRODUCTION, WAGE-EARNER EMPLOYMENT, LAND PRODUCTION PER WAGE-EARNER

Census Year	Production (quantity)	Wage-Earners	Production per Wage-Earner
1899....	100	100	100
1904....	122	116	105
1909....	159	140	114
1914....	169	149	113
1919....	214	193	111
1921....	170	147	116
1923....	261	186	140
1925....	269 ¹	178	151 ¹
1927....	272	177	154
1929....	303 ²	187	162 ²

¹ Revised.

² Tentative and subject to revision.

Factory Value.—The aggregate factory value of products made in

1929 in the 210,959 manufacturing establishments of the nation was \$70,-434,863,443, a sum 12 per cent above that reported for 1927.

MANUFACTURES IN 1930

Production Level.—Statistics more recent than those for 1929 covering all manufactures, are not yet available, the biennial census of manufactures for 1931 being in preparation as this report is written. For a few industries, however, annual censuses are taken, and for these industries statistics covering 1930 have been compiled. In a general way, the production level of the establishments in these industries reflects the condition of manufactures in the first year of depression following the peak of 1929, although no claim is made that this particular group of industries is fairly representative of industry as a whole. The output of the first two industries shown in the table below is measured in terms of value at the factory; that of the last three is in terms of physical quantities. It will be seen that production was curtailed unevenly in the several industries, the decreases in volume of output reflecting differences in market demand and in policies of manufacturing to stock, or both.

PRODUCTION IN SELECTED INDUSTRIES: 1928 TO 1930

	1930	1929	1928
Farm equipment (dollars).....	505,717,023	606,621,812	524,255,416
Clay products and nonclay refractories (dollars)...	300,695,931	406,507,775	400,644,078
Paper (tons).....	10,169,140	11,140,235	10,403,338
Pulp (tons).....	4,630,308	4,862,885	4,510,800
Lumber (M board feet).....	26,051,473	36,886,032	34,142,123

STATISTICS OF MANUFACTURES

VALUE OF PRODUCTS AND COSTS OF MANUFACTURE

	1929		1919		1909	
	Value and Costs	Per Cent of Total Value	Value and Costs	Per Cent of Total Value	Value and Costs	Per Cent of Total Value
Value of products.....	\$70,434,863,443	100.0	\$62,041,795,316	100.0	\$20,672,051,870	100.0
Wages.....	11,620,973,254	16.5	10,461,786,869	16.9	3,427,037,884	16.6
Salaries.....	3,595,064,061	5.1	2,880,868,284	4.6	938,574,967	4.5
Materials and containers.....	36,683,414,013	52.0 ¹	37,232,702,390	60.1 ¹	11,572,723,054	56.0 ¹
Fuel and purchased energy.....	1,866,165,719	2.7	1,638,238,905	2.6	570,067,824	2.7
Other costs and profits	16,669,246,396	23.7 ¹	9,828,198,868	15.8 ¹	4,163,648,141	20.2 ¹

¹ Data for cost of mill and shop supplies are combined with those for materials and containers for 1909 and 1919; in the 1929 figures they are included in "Other costs."

Duplications.—It should be explained that the statistics in the preceding table for cost of materials and value of products include large but indeterminable amounts of duplication resulting from the use of the products of some industries as materials by others. As a rule, however, whatever duplications occur are between different industries and are not found to any considerable extent within individual industries. (For a more detailed explanation of these duplications see page 476 in *THE AMERICAN YEAR BOOK* for 1930.)

Comparisons.—The principal reason for including the above table in this article is to show the nearly constant proportion which each specified item of cost formed of the total value of products from census to census. In particular, it should be noted that the proportions for 1909 show a striking similarity to those for 1929, although the value of the factory output had more than trebled during the twenty-year period. The condition points toward a close reciprocal relationship between the prices of materials, services, and products of manufacture.

PERSONNEL STATISTICS

Wage-earners and Output.—The number of wage-earners employed in 1929 in all industries, 8,838,743, was the largest number reported for any census year except 1919, a year of abnormal industrial activity and

marked labor inefficiency. Production per wage-earner reached a peak in 1929, having shown moderate increases during the first decade, slight decreases during the second and striking increases during the third decade of the thirty-year period covered by the first table. The increases are presumably due mainly to the substitution of machinery for men and to improvements in methods of mass production.

"White Collar" Costs.—One cost item which has shown a tendency to mount during the past decade, not only in gross amount but also in the average per employee, is that of salaries paid to executives and clerical workers, the 1929 figure being nearly 25 per cent larger than that for 1919. Although census data afford no direct answer to the question why this cost has increased, it seems probable that the expansion of record and report functions, including the managerial oversight of scattered plants under common ownership, has added to "white collar" costs. To get a complete account of managerial and clerical costs there should be added to the figures shown in the preceding table \$600,437,331 in salaries paid in 1929 to 208,363 salaried officers and employees of central administrative offices. These non-manufacturing units direct, coördinate, and supplement the activities of the groups of manufac-

turing establishments operated by them.

FUEL AND PURCHASED ELECTRIC ENERGY

Costs.—The 1929 data on the consumption of fuel and purchased electric energy were more comprehensive than those for earlier censuses. The recent census report on this subject was the first to include cost figures for the several kinds of fuel and also the first to include quantity statistics for counties. While the cost of fuel and purchased electric energy is the smallest of the classified costs of manufacture as shown in the third table, fuel and energy are nevertheless important production factors, in the use of which radical changes have occurred since the beginning of the century. A bill of \$1,866,165,719 for fuel actually purchased, or \$1,973,863,329 if the total value of all fuel actually consumed (including that produced and consumed in the same plants or in plants under the same ownership) is considered, was charged against manufactures in 1929.

Coal and Coke Consumption.—The total consumption of coal (both anthracite and bituminous) in 1929 was 7 per cent below the level of 1919, but this decrease was offset to some extent by the increase (not shown by the census statistics) in the amounts consumed indirectly in purchased electric energy, generated in part by the combustion of coal in central power stations. The consumption of coke increased 23 per cent.

Oil and Gas Consumption.—A much more important increase is shown for fuel-oil consumption, 75 per cent as compared with 1919. The amount of natural gas used in manufactures in 1929, 429,826,799 M cubic feet, exclusive of the large quantities used as a material in the "bone black, carbon black, and lampblack" industry, was greater than the combined

amount of natural and manufactured gas reported a decade earlier. (The two kinds of gas were not reported separately for 1919.) The consumption of manufactured gas in manufacturing industries is enormous, totaling 1,258,450,089 M cubic feet if the large quantities of blast-furnace, coke, and petroleum gases used principally in the iron and steel and fuel-producing industries are included.

MOTIVE POWER IN MANUFACTURES

The increased use of motive force for driving plant machinery is not discernible in prime-mover statistics. The combined horsepower capacity of steam engines and turbines, internal-combustion engines, and water wheels and turbines has increased but six-tenths of 1 per cent during the last decade, but the method of applying their power to plant machinery has undergone a considerable revolution. Motors driven by energy generated by prime movers are 75 per cent more numerous than in 1919, while their horsepower rating has been increased 78 per cent. Between 1927 and 1929 the rating increase in motors on plant energy amounted to 10 per cent, their capacity for the later year totaling 12,376,376 horsepower. The installation of motors on purchased current has been even more rapid, the rate of increase in horsepower capacity, comparing 1929 with 1919, being 145 per cent. The 22,775,664 horsepower rating of these motors was 19 per cent more than the corresponding figure reported by manufacturing establishments for 1927. The rapid technical advance in recent years in the generation and transmission of central-station energy, now available to manufacturers in favored areas at less than one cent per kilowatt-hour, has had a marked effect on the expansion of manufacturing industries.

STATISTICS OF MANUFACTURES

SUMMARY FOR ALL MANUFACTURING INDUSTRIES AND FOR INDUSTRY GROUPS: 1929

	Number of establishments	Salaried employees	Wage-earners (average for the year)	Salaries	Wages	Cost of materials and containers for products	Fuel and purchased electric energy	Value of products	Value added by manufacture ¹	Rated horsepower	
										Prime movers	Motors driven by purchased electric energy
All industries.....	210,959	1,358,775	8,838,743	3,595,084,061	11,020,973,254	36,683,414,013	1,866,165,719	70,434,963,443	31,885,283,711	20,155,397	22,775,684
Food and kindred products.....	56,320	134,764	753,247	316,143,698	902,142,970	8,470,839,064	161,443,793	12,023,589,289	3,391,306,432	1,775,938	2,831,975
Textiles and their products.....	27,404	139,871	1,707,708	410,623,098	1,733,031,423	4,982,740,911	121,104,813	9,243,302,523	4,139,456,979	1,989,325	2,156,673
Forest products.....	26,912	79,906	876,383	216,713,202	839,382,973	1,550,372,304	35,810,649	3,591,765,090	2,005,582,137	2,421,861	1,252,343
Paper and allied products.....	3,126	31,009	233,393	94,285,167	287,350,792	1,011,026,312	81,685,791	1,892,251,148	799,529,045	2,207,352	959,452
Printing, publishing, and allied industries.....	27,522	207,779	357,988	501,714,415	636,371,372	740,748,389	25,735,159	3,170,139,651	2,403,656,103	43,245	606,196
Chemicals and allied products.....	8,278	74,506	280,868	201,355,972	354,393,308	1,871,275,949	99,437,320	3,759,404,640	1,788,691,371	1,084,146	1,228,149
Products of petroleum and coal.....	1,497	40,878	147,216	86,235,815	229,050,010	2,143,614,665	403,225,528	3,647,747,957	1,100,907,764	1,142,158	613,100
Rubber products.....	525	22,834	149,148	55,352,581	207,305,857	559,000,306	19,677,375	1,117,460,252	538,782,571	248,949	572,363
Leather and its manufactures.....	4,277	32,745	318,415	84,358,657	359,412,972	1,118,164,062	13,777,901	1,905,976,775	774,034,812	200,648	235,694
Stone, clay and glass products.....	8,514	39,495	328,417	107,155,694	432,817,393	368,809,309	157,536,670	1,561,414,590	1,035,074,611	1,055,645	1,798,757
Iron and steel and their products, not including machinery.....	6,640	110,700	880,882	310,072,372	1,380,986,821	3,399,745,639	463,127,847	7,137,928,058	3,275,054,572	5,408,676	7,792,146
Nonferrous metals and their products.....	7,522	51,570	314,741	143,719,249	443,466,623	2,400,659,213	64,784,985	3,597,057,717	1,131,613,519	517,169	1,053,048
Machinery, not including transportation equipment.....	12,955	217,348	1,091,269	582,518,063	1,634,165,729	2,584,082,769	110,296,860	7,043,380,390	4,349,000,761	831,910	2,815,433
Transportation equipment, air, land, and water.....	2,550	66,966	583,355	187,028,554	943,221,905	3,629,190,960	53,957,118	6,047,209,390	2,364,061,312	562,544	1,708,648
Railroad repair shops.....	2,297	32,481	398,156	81,594,693	697,311,434	517,159,834	31,183,731	1,269,916,839	721,573,274	442,112	711,035
Miscellaneous industries.....	14,920	75,923	417,467	236,192,921	500,581,672	1,335,984,327	23,376,179	3,426,319,134	2,066,958,628	223,719	440,652

¹ Value of products less cost of materials, containers for sale with products, fuel, and purchased electric energy.

XIII. MANUFACTURES AND TRANSPORTATION

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

(For further information, the reader may address the following organizations)

MANUFACTURERS

AMERICAN ASSN. OF CREAMERY BUTTER MANUFACTURERS, 208 S. LaSalle Street, Chicago, Ill.
AMERICAN ASSN. OF OIL BURNER MANUFACTURERS, 350 Madison Ave., New York City.
AMERICAN ASSN. OF WOOLEN AND WORSTED MANUFACTURERS, 45 E. 17th Street, New York City.
AMERICAN AUTOMOBILE ASSN., Pennsylvania Ave. at 17th Street, Washington, D. C.
AMERICAN BOTTLERS OF CARBONATED BEVERAGES, 726 Bond Bldg., Washington, D. C.
AMERICAN BRUSH MANUFACTURERS ASSN., 505 Arch St., Philadelphia, Pa.
AMERICAN HARDWARE MANUFACTURERS' ASSN., 342 Madison Ave., N. Y. C.
AMERICAN INSTITUTE OF STEEL CONSTRUCTION, 350 Madison Ave., New York City.
AMERICAN IRON AND STEEL INSTITUTE, 75 West Street, New York City.
AMERICAN IRON, STEEL AND HEAVY HARDWARE ASSN., 47 W. 34th St., New York City.
AMERICAN PAPER AND PULP ASSN., 18 E. 41st Street, New York City.
AMERICAN PETROLEUM INSTITUTE, 250 Park Avenue, New York City.
AMERICAN ZINC INSTITUTE, INC., 27 Cedar Street, New York City.
ELECTRICAL MANUFACTURERS COUNCIL, 30 E. 42nd St., New York City.
MELLON INSTITUTE OF INDUSTRIAL RESEARCH, University of Pittsburgh, Pittsburgh, Pa.
NATIONAL AMERICAN WHOLESALE LUMBER ASSN., 41 E. 42nd Street, New York City.
NATIONAL ASSN. OF COTTON MANUFACTURERS, 80 Federal Street, Boston, Mass.
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PART FIVE

SOCIAL CONDITIONS AND AIMS

DIVISION XIV

IMMIGRATION AND POPULATION

RACE CONDITIONS IN THE UNITED STATES

By HARRY H. LAUGHLIN

CARNEGIE INSTITUTION OF WASHINGTON

TRENDS

The principal trends in race conditions in the United States in 1931 as contrasted with 1930 may be listed as follows: 1. Trends in composition of the American people, by major racial and nativity groups, as shown by the 15th census: 2. The reduction of net immigration from Europe to

the United States to the vanishing point; 3. The continued northern migration of the Negro; 4. The voluntary return to Mexico of many Mexicans in the United States; 5. The considerable increase of Filipinos on the Pacific Coast; 6. The rapid change in racial composition of the people of the Hawaiian Islands.

RACIAL COMPOSITION AS SHOWN BY THE CENSUS

Color or Race Number	1930 (Apr. 1)	1920 (Jan. 1)	Per Cent of Increase
Total population.....	122,775,046	105,710,620	16.1
White.....	108,864,207	94,820,915*	14.8
White, 1920 adjusted for Mexicans.....	108,864,207	94,120,374	15.7
Negro.....	11,891,143	10,463,131	13.6
Mexican.....	1,422,533	700,541†	103.1
Indian.....	332,397	244,437	36.0
Chinese.....	74,954	61,639	21.6
Japanese.....	138,834	111,010	25.1
Filipino.....	45,208	5,603	706.9
Hindu.....	3,130	2,507	24.9
Korean.....	1,860	1,224	52.0
All other.....	780	154	406.5
Per Cent Distribution			
Total.....	100.0	100.0	....
White.....	88.7	89.7*	....
White, 1920 adjusted for Mexicans.....	88.7	89.0	....
Negro.....	9.7	9.9	....
Mexican.....	1.2	0.7†	....
Indian.....	0.3	0.2	....
All other.....	0.2	0.2	....

* The white population as classified in 1920 included 700,541 persons (estimated) who would have been counted as Mexicans in 1930. In the adjusted figures these have been subtracted from the 1920 white population as reported.

† Estimated on the basis of the returns for country of birth and country of birth of parents.

RACE CONDITIONS IN THE UNITED STATES

Nativity and Parentage	Per Cent Distribution,	Per Cent of Increase,
	1930	1920-1930 With 1920 adjusted
Total white.....	100.0	15.7
Native.....	87.7	18.1
Native parentage.....	64.4	20.1
Foreign or mixed parentage.....	23.3	13.0
Foreign parentage.....	15.6	9.5
Mixed parentage.....	7.7	20.8
Foreign born.....	12.3	0.8

MIGRATION REDUCTION

Immigrant Loss.—For the first time since the Civil War the annual immigration into the United States was less than 100,000. For the year ended June 30, 1931, the total number of immigrants admitted to the United States was 97,139; non-immigrants admitted 183,540; total aliens admitted 280,679. Aliens departed from the United States during the same period were: emigrants 61,882; non-emigrants 229,035; total 290,916. Thus, by considering both immigrant and non-immigrant aliens, the migration tide turned, and during the year the United States lost 10,237 more aliens than she received.

Cause and Effect of Immigration Restriction.—The immigration laws of 1921 and 1924, the executive order of September, 1930, and the worldwide economic depression have resulted in a very radical restriction of

immigration. This restriction is now being definitely reflected in the racial trends of the American people. With the cessation of immigration the rate of change in the race-structure from old stock toward new stock has been slowed down considerably. This has been accompanied by a somewhat wider geographic distribution and social assimilation of immigrants. A contributing item is the dying-off of the older immigrants and the development of their children under American conditions. Although alien white blood continues to be concentrated on the great cities of the eastern and northern states, and the Oriental immigrants along the Pacific Coast, there has, nevertheless, been a perceptible tendency toward a more even geographical distribution. Thus Americanization—so far as racial constitutions permit—has been perceptibly advanced.

CHANGE IN POPULATION BY ADMISSION AND DEPARTURE OF ALIENS

(Fiscal year ended June 30, 1931)

Race or People	Total Aliens Admitted	Total Aliens Departed	Increase (+) or Decrease (—)
African (black).....	2,932	2,153	+ 779
Armenian.....	677	144	+ 533
Bohemian.....	698	3,367	— 2,669
Bulgarian.....	1,138	2,475	— 1,337
Chinese.....	7,479	9,506	— 2,027
Croatian and Slovenian.....	1,367	1,142	+ 225
Cuban.....	5,864	6,946	— 1,082
Dalmatian, Bosnian and Herzegovinian.....	219	758	— 539
Dutch and Flemish.....	5,627	5,437	+ 190
East Indian.....	262	322	— 60
English.....	51,479	56,480	— 5,001
Finnish.....	1,669	3,082	— 1,413
French.....	13,738	11,743	+ 1,995
German.....	42,455	34,468	+ 7,987
Greek.....	4,596	3,988	+ 608
Hebrew.....	9,024	2,158	+ 6,866
Irish.....	19,083	12,320	+ 6,763
Italian (North).....	5,238	3,602	+ 1,636
Italian (South).....	24,580	23,518	+ 1,062
Japanese.....	7,765	9,346	— 1,581
Korean.....	76	104	— 28
Lithuanian.....	819	1,107	— 288
Magyar.....	2,533	2,383	+ 150
Mexican.....	5,964	17,733	— 11,769

XIV. IMMIGRATION AND POPULATION

Race or People	Total Aliens Admitted	Total Aliens Departed	Increase (+) or Decreased (-)
Pacific Islander.....	31	30	+ 1
Polish.....	4,303	6,556	- 2,253
Portuguese.....	2,745	4,754	- 2,009
Rumanian.....	670	1,706	- 1,036
Russian.....	2,666	2,644	+ 22
Ruthenian (Russnick).....	293	126	+ 167
Scandinavian (Norwegians, Danes, and Swedes).....	16,721	21,855	- 5,134
Scotch.....	19,405	16,492	+ 2,913
Slovak.....	2,887	2,242	+ 645
Spanish.....	5,072	7,771	- 2,699
Spanish-American.....	5,586	6,864	- 1,278
Syrian.....	870	676	+ 194
Turkish.....	198	212	- 14
Welsh.....	1,413	1,097	+ 316
West Indian (except Cuban).....	1,868	2,856	- 988
Other peoples.....	669	753	- 84
Total.....	280,679	290,916	-10,237

HARDSHIP AMELIORATION

In the earlier days of post-war restriction of immigration, a number of hardships inevitably crept in. The principal one of these was the so-called "splitting of families." The second most serious was the keen disappointment and economic loss caused by debarring of aliens who sought admission at our borders, and by the deportation of certain aliens found here illegally. The seriousness of enforced and unexpected family splitting, now largely a thing of the past, is gauged by the degree to which the integrity of the family in turn is depended upon to constitute the principal social, economic and reproductive unit of the nation. Both these and lesser hardships due to restricted immigration have now been greatly ameliorated, principally by the action of time, but also through considerate laws and their administration. In this amelioration special credit is given to the new and successful policy of the examination overseas of would-be immigrants. This practice, although only a few years old, has now become the principal method of sorting would-be immigrants. More certainly now than any time heretofore the would-be immigrant is aware of the degree to which his family would be split by debarring or deportation if he or one of them came to America.

FOREIGN-BORN POPULATION

The Nation.—For the nation as a whole, the census of 1930 found 7,153,-

709 foreign-born white males and 6,212,698 foreign-born white women, or a total of 13,366,407. It is interesting that among the foreign-born whites there are 115.1 males to 100 females, while for the country as a whole there are 102.5 males to 100 females. Nevertheless the sex-ratio among foreign-born whites is not high enough to indicate a migration of workers only. The fact that so many foreign-born women are here as immigrants indicates the immigration of foreign human seed-stock. For the nation as a whole the 13,366,407 foreign-born constitute 10.9% of the total 122,775,046 population.

New York State.—Also the figures show a continued very high concentration of foreign blood in New York State. The white population of New York State in 1930 was 12,150,293, an increase of 10.4% over that of 1920. In 1930 the whites constituted 96.5% of the state's population, compared with 97.9 in 1920. In 1930 the white persons of native parentage made up 35.5% of the state's total population, while native-born persons of foreign or mixed parentage constituted 35.6%. The total number of foreign-born white persons in 1930 was 3,191,549, or 25.4% of the total population of the state.

CHINESE IN THE UNITED STATES

Racial trends and their relation to legislative control are well illustrated by the history of the Chinese in the

RACE CONDITIONS IN THE UNITED STATES

United States. In the *Annals* of the American Academy of Political and Social Science for November, 1930, Dr. George T. Renner of the University of the State of Washington reviews the history of the Chinese in the United States. According to Dr. Renner the Chinese first came to the Western World through the Spanish trade routes from the Philippine Islands into Mexico, thence it followed the Spanish colonization of California through establishment of Missions and later directly to our own Pacific Coast. Beginning in 1848 with 3 Chinese along our Pacific Coast, the number increased rapidly until it reached 132,300 in these states in 1882. This was the time of the Chinese Exclusion Act. Since then the numbers have declined constantly with every census except that the period 1920-1930 shows an increase of 6,279.

DEPORTATION

The great number of illegal aliens in the United States is not only a matter for criminal and social consideration but is also of racial importance. It is also of eugenical or family-stock importance, because many

of these aliens who have come illegally are those who would have been debarred as undesirable in character and family-stock, had they sought legal admission. The deportation activities of the Federal Government have resulted in a greatly increased number of deportations. This is due largely to the administrative efficiency of Secretary of Labor, William N. Doak. During the year ending June 30th, 1931, 18,142 persons were deported. Secretary Doak further estimates that there are illegally in the United States approximately 400,000 aliens. He has also exposed criminal gangs and rings engaged in bootlegging aliens into the United States. These he has prosecuted vigorously.

NORTHERN MIGRATION OF THE NEGRO

With the shutting down of foreign immigration the demand for cheap labor in the northern commercial and industrial centers has been supplied largely by southern Negroes, migrating northward and westward. The comparison between the distribution of the Negro in 1920 and 1930 illustrates this feature of racial trends.

Section	Number		Increase	
	1920	1930	Number	Per Cent
The North.....	1,472,309	2,409,219	936,910	63.6
The South.....	8,912,231	9,361,577	449,346	5.0
The West.....	78,591	120,347	41,756	53.1
Total.....	10,463,131	11,891,143	1,428,012	13.6

A further interesting feature of Negro migration is the fact that the Negro tends strongly toward lower reproduction rates in the North, but is still highly fertile in the southern states, which continue to export Negro labor to the North. The South seems to be producing the Negroes and the North consuming them.

RACE INTEGRITY LAWS

In the southern states the so-called Race Integrity Laws continue to make headway. These laws in substance define a colored person as one "any of whose ancestors were of Negro blood" and, in turn, forbid the marriage of colored and white per-

sons. This Race Integrity Law supplants the older definitions of colored person. The older statutes permitted a person to qualify legally for marriage with a white person if the percentage of colored blood in the particular qualifier was not more than one-half to one-sixty-fourth, depending on the state.

MEXICAN HOMEBOUND TIDE

New Classification.—For the first time a federal census classified Mexicans as such. Formerly a Mexican, by the census classification, was a white person or an Indian. This new practice by the census will enable a more complete analysis of the Mexi-

XIV. IMMIGRATION AND POPULATION

can problem in the great southwest. Under this new practice 1,422,533 persons were enumerated as Mexicans in 1930. However, the bureau registered 65,065 persons of Mexican birth as white. In order to make comparative studies it is necessary therefore to correct the white figures for 1920. This the Bureau did by deducting 700,541 from the total white persons enumerated in 1920 and which number was the Bureau's estimate of Mexicans enumerated in 1920.

Effect of Depression.—During the year a great number of Mexican laborers, amounting to a considerable fraction of the whole number in the United States, have returned to Mexico. This "tide turning" has been largely due to economic depression with its consequent lack of employment for those Mexicans north of the Rio Grande. There has also been a tightening up of border patrol which in the future is looked to to prevent illegal entry of Mexicans into the United States. Thus the problem of Mexican immigration has largely

solved itself, so far as the danger of Mexican conquest of the southwest by immigration is concerned. The rapidity with which Mexican laborers and families came northward into United States when wages were high and employment readily secured, and by which this same tide receded back to Mexico with hard times, illustrates the fluidity of modern migration over great distances, and in great numbers. In Mexico economic life without wages is evidently simpler for the Mexican family than such life is in the United States, hence the turn of the Mexican tide.

PACIFIC COAST FILIPINOS

With free trade the free migration between United States and the Philippine Islands, the Filipino on the Pacific Coast has largely taken the place of the former immigration of Japanese and Chinese, now greatly restricted. The census figures for 1920 and 1930 illustrate this trend for our Western states.

Color or Race	1920 (Jan. 1)	1930 (Apr. 1)	Increase	
			Number	Per Cent
Chinese.....	61,639	74,954	13,315	21.6
Japanese.....	111,010	138,834	27,824	25.1
Filipino.....	5,603	45,208	39,605	706.9
Total population.....	105,710,620	122,775,046	17,064,426	16.1

RACE NUMBERS IN HAWAIIAN ISLANDS

Hawaii continues to be one of the world's most interesting laboratories in race-making. It illustrates the principle that migration in the long run, more important than modern

military victory, but more like old-time warfare, determines possession of a country. Comparative figures for population composition of Hawaii for 1920 and 1930 illustrate the outstanding features of Hawaiian racial trends.

Color or Race	1920	1930	Increase	
			Number	Per Cent
Filipino.....	21,031	63,052	42,021	199.8
Porto Rican.....	5,602	6,671	1,069	19.1
Spanish.....	2,430	1,219	- 1,211	- 99.3
Korean.....	4,950	6,461	1,511	30.5
Portuguese.....	27,002	27,538	536	2.2
Japanese.....	109,274	139,631	30,357	27.8
Chinese.....	23,507	27,179	3,672	15.6
American, Br., etc.....	19,708	44,895	25,187	127.8
Other.....	658	780	122	18.5
Part Hawaiian:				
Caucasian.....	11,072	15,632	4,560	41.2
Asiatic.....	6,955	12,592	5,637	81.0
Hawaiian.....	23,723	22,636	- 1,087	- 4.8
Total.....	255,912	368,336	112,424	43.9

IMMIGRATION PROBLEMS

IMMIGRATION PROBLEMS

By PETER F. SNYDER

ASSISTANT TO THE SECRETARY OF LABOR

ANALYSIS OF IMMIGRATION

Admissions and Departures.—

Immigration to the United States during the fiscal year ended June 30, 1931, was less than in any year since 1862. Emigration from the United States, while not numerically larger than emigration of past years, counterbalanced the influx, so that for the first time since statistics have been assembled there was a net decrease of American population by reason of arrivals and departures of aliens. In former years immigration has contributed population increases, net, ranging from 18,585 in 1918 to 817,619 in 1910. The net population decrease was 10,237 in 1931. During the fiscal year 1931, 280,679 aliens, both immigrant and non-immigrant, entered the United States. In 1930 arrivals totaled 446,214. The decline was at a rate of 37%. Immigrants—aliens contemplating permanent residence,—totaled only 97,139, compared with 241,700 for the previous year. Non-immigrants,—aliens entering temporarily or in transit; also returning residents,—numbered 183,540, compared with 204,514 in the previous year. Emigrants,—aliens permanently departing—were 61,882, as compared with 50,661 the previous year. Non-emigrants,—aliens departing with intention to return; also departing temporary visitors—were 229,034, the comparable figure of the previous year being 221,764.

Immigration Sources.—Europe as a whole sent us 61,909 immigrants, or 63.7% of the total influx. Countries of North, South and Central America contributed 30,816, or 31.7% of the total. Asia sent 3,345, or 3.4%, while Africa, Australasia and other areas all together contributed only 1,069, or 1.1%. The percentages of contribution are approximately the same as in the previous year, except that Europe's is greater (63.7% this year as against 61% last) while

America's is smaller (31.7% this year as against 36.4% last). The countries that sent most immigrants were Italy, 13,399; Germany, 10,401; the United Kingdom, 10,294; the Irish Free State, 6,121; Poland, 3,604; Czechoslovakia, 2,016. Italy, in first place this year, had 8,928 less than Italy in third place last year. Most drastic has been the reduction in immigration from Mexico. The high tide of Mexican immigration occurred in 1927, when an influx of 67,721 persons entered from that country. By 1931 it fell to 3,333. Canadian immigration likewise has been reduced. In 1929 there were 64,440 persons admitted to the United States from that country. In 1930 admissions were 63,502, while in 1931 a 65% reduction is shown in the figure 21,687.

Consular Visas.—The extraordinary decline in immigrant admissions has been due in large part to a policy decided upon by the Department of State, with the approval of President Hoover, early in the fiscal year. On Sept. 8, 1930 a statement was issued explaining a determination to invoke a provision of the 1917 Immigration Act so as to hold, in a time of widespread unemployment, that certain aliens, being technically "likely to become a public charge" must have action upon their visa applications deferred to a more propitious time.

Restrictive Effects.—A study of the following figures will show what a tremendous effect the present restrictive immigration laws have. In a single year prior to the World War, and, of course, prior to the first quota law, passed in 1921, immigration exceeded the million mark. A larger number of aliens arrived in a single year from each of several countries of Europe during that period than now come from the entire Continent. For example, in 1913 the then Russian Empire contributed 291,040 im-

migrants to this country; Italy sent 265,542, and former Austria-Hungary, 254,825. If comparison of these figures be made with the 97,139 alien immigrants admitted from all European countries in the fiscal year ended June 30, 1931, the drastic effect of American legislation will be appreciated.

Sex Classification.—Immigrant females continue to outnumber males. This is a development of the past two years. Statistics of sex have been compiled since 1871, and in the whole 61 years male immigrants have outnumbered female 8,192,737, the average influx being 63.4 male and 36.6 female. In the year just closed (1931) the trend was further marked, admissions of females numbering 56,518 (58.2%) while males were only 40,621, or 41.8%. In the figures of emigrants, however, males continued to predominate. Emigration statistics have been kept since 1908, and in twenty-four years male emigrants have been 78.9% of the total, while females have been but 21.1%. In the last two fiscal years the proportion of female departures has been above average, but the male exodus is still larger than the female. In 1931 they were 40,857, or 66%, and females were 21,025, or 34%.

CHINESE ALIENS

Admissions.—The number of Chinese admitted during the year was 7,479, of which number 748 were immigrants and 6,731 were non-immigrants. Of this latter, 4,588 were passing in transit and 345 were entering as temporary visitors. In the previous fiscal year 8,114 were admitted, 970 being immigrants and 7,144 being non-immigrants. Chinese numbering 9,506 departed during the past year as compared with 9,542 the previous year, the net decrease of alien Chinese residents being 2,027.

Citizenship Claims.—The main problem in connection with Chinese immigration has to do not with alien Chinese but with Chinese who claim American citizenship. While a con-

siderable number of alleged citizens claiming birth in the United States apply for readmission, for the most part citizen applicants are those who claim to be citizens by reason of the birth of their alleged fathers in this country. There applied for admission during the fiscal year 3,584 Chinese who claimed citizenship as against 3,220 of this class who applied for admission during the fiscal year 1930. In order to determine the truth of the claims of these applicants, the Immigration authorities are confronted with the difficult task of determining the relationship of an applicant to his alleged father when birth is said to have occurred in China. While the number of Chinese persons admitted as citizens showed an increase, the admissions of Chinese aliens of the different categories diminished as compared with the fiscal year 1930, the parallel figures being 7,479 and 8,114.

Surreptitious Entrants.—A vexatious problem has existed in recent years, *viz.*, the voluntary surrender of Chinese entering surreptitiously from Mexico over the Southern California border for the avowed purpose of being sent to China at the expense of this Government, a return required by the law, as their presence in the United States is illegal, and Mexico refuses to receive them back. These Chinese are practically forced out of Lower California by lack of work and sustenance. It was thought that a wholesome check would be placed upon this practice by prosecuting the Chinese for illegal entry under the act of March 4, 1929, with resulting imprisonment before their deportation to their home country; but this has not proved to be the case, as the problem still faces the Chinese of attempting to come to the United States or starve.

DEPORTATION

Deportees.—During the past fiscal year a total of 18,142 aliens were arrested and formally deported, as compared with 16,631 in the preceding year, and 12,908 for the fiscal

year ended June 30, 1929. Of the past year's deportees, 6,162 were deported to Europe, 2,276 to Canada, 8,409 to Mexico, 504 to other countries of the Western Hemisphere, 710 to Asia, and 81 to Africa, Australia and the Pacific Islands.

Departure Classification.—In addition to the 18,142 aliens actually deported there were 11,719 subject to deportation who departed in order to avoid formal deportation. It is appropriate to note that under existing law none of the aliens deported or ordered deported since the passage of the act of March 4, 1929, are permitted to return to the United States under penalty of arrest and punishment. The Commissioner General of Immigration recommends that this adamant provision should be modified so as to confer upon the Labor Department a discretion which would be wisely exercised to authorize permission to reapply in extremely worthy cases. This recommendation is prompted by humanitarian reasons, as cases often arise in which this permanent bar from readmission causes extreme hardship.

Improper Visas.—Persons found in the United States without proper visa under the Immigration Act of 1924 make up the largest of all classes of deportees. In 1930 they numbered 6,694 and in 1931 their total was 6,205. The next largest class is that of persons who remained longer than permitted. These were 2,019 in 1930 and 2,835 in 1931. Of the 18,142 aliens expelled in 1931, 2,066 were illiterate.

Criminals.—During the year 856 aliens, convicted of crimes involving moral turpitude and sentenced to imprisonment of a year or more after entering the United States, were deported following release from prison. The largest number of deportees of this class (314, or 36.7 per cent) were Mexicans. The others included 97 English, 76 Italian, 55 German, 38 Irish, 38 Scotch, 36 French, 30 Spanish, and 172 of other races. In addition to the above, the deportees last year included 917 aliens who

were criminals at the time of their entry. Here also Mexicans were the largest group (503, or 54 per cent). The others included English, 116; French, 65; Irish, 55; Scotch, 37; and 141 of other races. A number of these aliens had been previously deported, and all were subject to exclusion when they last entered the country. The total deportees of the criminal and immoral classes for the past year was 2,719, the Mexicans alone numbering 1,502, or 55 per cent.

Insane.—The number of insane or otherwise mentally defective aliens removed under warrant proceedings was 550, of those afflicted with a loathsome or dangerous contagious disease 230, and of those with other physical defects 172.

Anarchists, Communists, etc.—Only 18 aliens of the anarchistic class, or those opposed to organized governments and believing in or advocating their overthrow by force or violence, were deported during the year. The number of those who might actually be removed under the act of Oct. 16, 1918, as amended, is kept down by the difficulties in or actual impossibility of securing passports or travel documents permitting deportation to the country specified in the warrant. There is an additional difficulty in obtaining the quality of proof of subversive activities or affiliations in this class of cases that will satisfy the Federal courts when habeas corpus proceedings are resorted to.

Removal of Distressed Aliens.—Early in 1931 an important step was decided upon as a means of alleviating to some degree the want and suffering prevailing throughout the country, especially in the larger centers of population. It was determined to take advantage of a little-used section of the Immigration Act of 1917, authorizing the removal from the country at the expense of the immigration appropriation of aliens who have fallen into distress or need public aid within three years of their entry. These removals must be upon the personal application of the alien,

and the claims of distress and need are carefully investigated and established before approval is given. The actual removals by the end of the year numbered 541, the steamship companies coöperating by concessions in fares.

BORDER PROBLEMS

Arrests and Seizures.—The Immigration Border Patrol apprehended 23,593 persons of all kinds found engaged in unlawful or questionable activities. Of these 22,504 were turned over to examiners of the Immigration Service, of which 21,335 were smuggled aliens and 228 were found to be smugglers of aliens. There were turned over to the Customs Service, 623 persons; to the Prohibition Unit, 51 persons; to state and municipal authorities, 338; and to other branches of the Government, 77 persons. Seizures were made of 482 automobiles of an estimated value of \$176,305, and of 125 other conveyances of an estimated value of \$38,956. Liquor aggregating 117,612 quarts estimated at a value of \$118,474, and miscellaneous contraband goods valued at \$8,856 were seized by patrolmen and delivered to the appropriate governmental agencies concerned.

Border Patrol.—Each year since its establishment the Border Patrol has made tremendous strides in the development of its efficiency. The organization is recruited by means of competitive examinations from the finest type of young manhood. The work is arduous, exacting, and oftentimes hazardous, calling for the exercise of initiative, resourcefulness, discretion, courtesy and patience. Uncompromising honesty, intelligence, ambition, industry and courage are required. Fifteen members of the organization have lost their lives in encounters with outlaws since 1924.

LAW ADMINISTRATION

Provisions and Penalties.—On March 4, 1929, an act was approved providing for the punishment of

aliens entering unlawfully. Section 1 made it a felony for an alien to enter or to attempt to enter sixty days after the enactment of the act if he had been previously arrested and deported in pursuance of law, and provided as a penalty imprisonment for not more than two years or a fine of not more than \$1,000, or both. Section 2 of the act made it a misdemeanor for an alien after the passage of the act to enter at any time or place other than as designated by immigration officials or to elude examination or inspection, or obtain entry by wilfully false or misleading representations or by the wilful concealment of a material fact. A handicap has been found in the practical application of this law. Section 2 penalizes any alien who thereafter enters the United States at any time or place other than as designated by immigration officials or eludes examination or inspection, and so forth, but many courts and United States attorneys hold that prosecutions thereunder must occur in the judicial district of the aliens' entry, under the fundamental principles of criminal law, although the aliens may be found in districts far removed therefrom. The Commissioner General of Immigration recommends that the act be so amended as to provide that prosecution may take place in the district where the alien may be located, making it a misdemeanor for an alien who enters illegally to be found in the United States.

Prosecutions.—Under the act of March 4, 1929, there were instituted during the year 5,681 prosecutions; 1,015 under section 1 and 4,666 under section 2. The aggregate of fines imposed by the courts for violations of this act is \$5,560 and of the length of imprisonments meted out about 1,066 years. There were 6,582 aliens bonded during the year and 322 bonds were forfeited. The number of fine proceedings, including those pending at the end of the fiscal year 1930, was 2,598, of which 1,061 resulted in the imposition of penalties totaling \$103,550. Remission of fines

was granted in 1,537 cases to the amount of \$361,720. It will be seen that the total ordered refunded vastly exceeded that of the fines imposed, indicating the extreme fairness and liberality of the reviewing officers. The decrease in the amount of fines imposed from the \$257,500 in the prior fiscal year is due primarily to the abnormal decrease in immigration, but some portion thereof is undoubtedly a reflection of the greater care on the part of vessel interests in complying with the burdens imposed upon them by the law, and, also, to certain court decisions denying our authority to impose fines in certain classes.

Alien Seamen.—For many years the problem of preventing alien seamen from deserting their vessels and remaining here without compliance with the provisions of the immigration laws relating to applicants for admission has sorely perplexed the Immigration Bureau and its field officers. Shore leave and the right to search for another berth outward after being paid off or even following desertion cannot be questioned if the arriving seaman is a *bona fide* one in fact and physically fit. Sixty days are allowed for this purpose. All would be well if alien seamen would always go out after landing allegedly in pursuit of their calling, but we cannot keep such seamen under surveillance. Great improvement in the situation, however, has been noted in the past year, brought about in part perhaps by the act of March 4, 1929, making it a misdemeanor for any alien to enter irregularly and a felony to enter or attempt to enter after arrest and deportation. During the past year there were 3,341 recorded desertions of alien seamen as compared with 9,117 in the fiscal year 1930, and 11,314 in the fiscal year 1929. A decision of the Supreme Court last March in the case of *Philippides v. Day* is the outstanding ruling of the fiscal year from an immigration viewpoint and one which has definitely disposed of a contention advanced in many Federal courts in

the past few years as to the time within which the deportation of deserting alien seamen who had entered the country since July 1, 1924, the effective date of the present Quota Act, could lawfully be made. It was definitely held that alien seamen who have deserted their vessels since the passage of the 1924 law can be deported at any time thereafter.

LEGISLATION

Narcotic Vendors.—The subject of the control of immigration is never static but is continually undergoing changes to meet new conditions or to correct defects or omissions in the body of law. What seems the most important enactment from an immigration standpoint is an act approved Feb. 18, 1931, authorizing the deportation of any alien, with the exception of an addict who is not also a peddler or dealer of narcotics, who is convicted and sentenced for a violation of or conspiracy to violate any provision of the narcotic laws. Heretofore deportation was possible only upon conviction and sentence under a certain section of one specific law, which prevented expulsion of those engaged in this nefarious traffic, inasmuch as by legal construction a conviction under the narcotic laws was not considered a sentence for commission of a crime involving moral turpitude, for which class of crimes deportation is authorized generally by the act of Feb. 5, 1917. The effect of this new measure in increased deportations will not be apparent until the fiscal year 1932.

Paroled Criminals.—Another piece of helpful legislation was the act of March 2, 1931, amending the Federal parole laws, and authorizing the release on parole of an alien prisoner subject to deportation when he becomes eligible to parole, on condition that he be deported and remain outside this country and its possessions and providing for his delivery to the Immigration Service for removal. A close working arrangement with the Department of Justice for the facilitation of action in this class of cases is in operation.

Laws Advantaging Women.—

Two recent laws, one approved July 3, 1930, and the other March 3, 1931, have further amended the act of Sept. 22, 1922, relating to the naturalization and citizenship of married women. The first provides for the waiving of the excluding provisions of the immigration laws, with certain exceptions, in favor of alien women eligible to citizenship who had theretofore married native-born citizens who had been honorably separated from the military or naval forces of the country after service during the World War. It is presumed that this measure will be of limited application and that not many women will seek admission under its terms. The second act was a still further liberalizing measure, its most important provision being that any woman who was a citizen of the United States at birth shall not be denied naturalization on account of her race, and repealing the provisions of the 1922 law that no woman whose husband is ineligible to citizenship shall be naturalized during the continuance of the marital status. These provisions have direct interest and bearing on the administration of the immigration laws.

Secretary of Labor's Annual Report.—

In his annual report the Secretary of Labor states that, although immigration is no longer a substantial menace to the economic progress of the United States, there is, in his opinion, no more important work before the Government than the administration of the immigration laws. These laws, he says, have a two-fold purpose: (1) To protect the social and political structure of American civilization from persons who seek to come here with strange, new doctrines of government, and (2) to give economic protection, particularly as to available employment, to those who for both legal and moral reasons should receive first consideration in the blessings of the workaday life. The Secretary of Labor states his belief that the good that has been brought about by restrictive immigration inures to the benefit of the peoples of foreign

countries as well as to those of the United States. Calling attention to the presence in the United States of many aliens who have come here illegally, the Secretary says: "Deportations during the past year have included an increased number of extreme radical aliens who are affiliated with organizations the purpose of which announcedly is to overthrow the Government of the United States by force and violence. The deportation of these alien enemies of the country requires greater effort than in the case of any other class. Their activities are carried on in such an insidious manner that necessary proof is difficult to uncover. Even in case where guilt is clearly shown, deportation proceedings are hampered by every possible resort to the courts and by persistent propaganda on the part of un-American organizations of American citizens. They are constant in their defense of violent activities. They encourage the theory that even aliens have an inherent right to engage in seditious acts of every sort against our Government." He further calls attention to efforts being undertaken to protect aliens lawfully in the country and pledges an endeavor to enforce the laws fairly, impartially, humanely and justly.

Amendments.—The Commissioner General of Immigration has suggested 27 amendments to the laws. He urges, in addition to technical administrative matters, a provision for the deportation of habitual or consistent violators of laws who cannot now be expelled; registration of aliens; authority to bond alien students to insure departure; a penalty for harboring and concealing smuggled aliens; non-quota status for parents over 60 years of age and stepchildren of American citizens; a provision for occupational preferences; modification of the perpetual exclusion provision of the act of March 4, 1929; extension of registry privilege to aliens having no record of lawful entry between June 3, 1921 and July 1, 1924; and special discretion for cases involving unusual hardship.

CITIZENSHIP AND NATURALIZATION

BY RAYMOND F. CRIST

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CITIZENSHIP

Status by Naturalization.—The fundamental authority for citizenship in the United States rests upon two provisions in the Constitution (see THE AMERICAN YEAR BOOK, 1928). The status of citizenship by naturalization is a conditional one, both under the provisions of the Constitution and the statutes applicable thereto. It differs from the citizenship of the native in that presumption of expatriation may ensue upon an absence of two years from the United States with residence in the state of former allegiance or upon five years' absence in any other foreign state. Such presumption may be overcome by action under rules of the Department of State through diplomatic or consular officers of the United States. Again, fraud in the naturalization is presumed if the newly naturalized citizen shall establish a permanent foreign residence within five years of acquisition of American citizenship. Such a course is *prima facie* evidence of an act of sufficient gravity to justify the institution of a suit by the Government to set aside the citizenship as fraudulently acquired, since permanent residence within the United States is a condition precedent to naturalization. Citizenship will terminate, whether the individual be native or naturalized, upon the taking of an oath of allegiance to any foreign sovereignty, notwithstanding that foreign citizenship shall not be vested consequent upon that act. Likewise expatriation follows acquisition of full foreign citizenship. While dual citizenship exists, one cannot claim citizenship in a country while demanding recognition as a citizen of another country.

Acquirement of Citizenship.—Citizenship has been quite uniformly conferred in the United States by the judicial process, and when so conferred the judicial proceeding is a case within the meaning of the Con-

stitution, although the litigation is to determine a status and to grant or deny a favor and not adjudicate a right. Citizenship has, however, been collectively conferred by Congress upon large numbers through its treaty-making powers in the acquisition of territory, and upon the admission of portions of such acquired territory to statehood. Citizenship has also been conferred upon the inhabitants of acquired territory by legislative enactments in the absence of definite treaty stipulations and prior to admission to statehood. Native-born American Indians were admitted to citizenship through tribal treaties prior to 1871, and by the Act of June 2, 1924 (43 Stat. 253), all native Indians were given citizenship.

MACHINERY OF NATURALIZATION

Limitations.—Naturalization is not open to all races but is limited to those who come within the language of Section 2169 of the Revised Statutes of the United States. The limitations of this section are to aliens being free white persons and those of African nativity and to persons of African descent. Within such limitations the Act of June 29, 1906 (34 Stat. 596), as amended, and the Act of September 22, 1922 (42 Stat. 1021), as amended, confine their field of operation and constitute the major laws of the United States on the question of naturalization.

Canal Zone and Philippine Islands.—Naturalization is not conferred in the Philippine Islands, the Canal Zone, nor any of the insular possessions except Porto Rico and the Virgin Islands. Citizenship in the Philippine Islands is conferred upon aliens resident in those islands under the Philippine naturalization law of 1920. Citizens of the Philippine Islands are not citizens of the United States but owe allegiance thereto.

XIV. IMMIGRATION AND POPULATION

Judicial Jurisdiction.—Congress has conferred jurisdiction to administer the naturalization law upon State Courts which have a seal and clerk and jurisdiction in actions at law or equity, or law and equity, in which the amount in controversy is unlimited. These State Courts are thereby made Federal agencies with jurisdiction coördinate with that of the District Courts of the United States. Courts of the Territories of Alaska and Hawaii of like territorial jurisdiction have been similarly empowered by Congress. In Porto Rico the United States District Court has had jurisdiction since March 2, 1917. The District Court of the Virgin Islands was clothed with similar jurisdiction Feb. 25, 1927, when Congress conferred United States citizenship upon certain inhabitants of the Virgin Islands and extended the naturalization laws to those islands. In the naturalization proceedings in all of these courts the United States is represented by appointees of the Secretary of Labor on the recommendation of the Commissioner of Naturalization.

Bureau of Naturalization.—Administration of the Acts of June 29, 1906, as amended, and of Sept. 22, 1922, as amended, and some minor acts, which comprise the entire naturalization code, is reposed in the central Federal Bureau of Naturalization in the Department of Labor. The Bureau accomplishes the administration of these laws through the field service with branches located in 38 cities throughout the United States, including Alaska, Hawaii, Porto Rico, and the Virgin Islands, subject to the direction of the Commissioner of Naturalization from administrative headquarters in Washington.

NATURALIZATION PROBLEMS

Alien Population.—The naturalization problem in this country is the largest and most complicated of any like problem in any other country and larger probably than in all other countries combined. This problem arises out of the millions of persons of foreign birth who have sought the

opportunities which this country offers through its wonderful resources. The Census Report for 1930 (preliminary sheet) is authority for the following figures with regard to the foreign-born white population: The total number, including men, women, and children, April 1, 1930, was 13,366,407. Of this number, 7,859,193 were naturalized; 1,246,521 had taken out first papers; 3,787,086 were alien; while for 473,607 the status as to citizenship was not reported. It may be of interest to note that 58.8 per cent, or more than half of the foreign-born population are naturalized citizens; 9.3 per cent have taken the first step toward citizenship and secured their "first papers"; 28.3 per cent remain alien; with the small number represented by 3.5 per cent whose citizenship status is unknown.

NATURALIZATION PROCEDURE

Process of Application.—Citizenship as ordinarily conferred upon persons of foreign birth is by judicial procedure. The first step in this proceeding is, however, ministerial, and consists in applying for a "certificate of arrival" to show the date, place, and manner of arrival in the United States of the intending applicant for citizenship. Such an application is made to the field naturalization office within whose territory the applicant resides. Accompanying this application must be the fee for the certificate of arrival and two photographs of the applicant. The certificate of arrival is issued upon the confirmation of the alleged arrival through examination of the immigration records for the port through which the alien was admitted into the United States. The admission must have been for permanent residence. Should there prove to be no record showing the arrival of the alien, he may, if arrival occurred prior to June 3, 1921, apply to the immigration authorities nearest his place of residence to have a record made of his entry and his status declared that of lawful admission for permanent residence.

Judicial Action.—The applicant then proceeds to secure from the

clerk of the court within whose jurisdiction he resides the "first paper," or declaration of intention to become a citizen of the United States within seven years from the date of such declaration. This action occurs in any of the courts empowered to naturalize aliens within whose jurisdiction the alien may reside. The final step is filing the petition to the court for admission to citizenship and the hearing of the petition by the court. If granted citizenship by the court, the petitioner is required to abjure all allegiance by name to the sovereignty of which he is a citizen or subject and all others in general, and to take the oath of allegiance to the United States. A certificate of citizenship is issued to the new citizen and is popularly known as the "second paper." A photograph of the applicant is required to be affixed to the certificate of citizenship as well as to the "first paper."

Residential Requirements.—A person of foreign birth must have been admitted to the United States for permanent residence under the immigration laws in force at the time of his arrival in order to be eligible to take valid action towards the acquisition of American citizenship. Five years after such admission, if at that time the individual should be possessed of a declaration of intention made by him at least two years before, he may proceed to file his petition for naturalization. He must obtain from the Department of Labor a certificate showing the date, place, and manner of his arrival in the United States immediately prior to petitioning, for filing with the clerk of the court. If the certificate were obtained prior to the making of the declaration of intention, it will be available for use in petitioning. This certificate is issued from the record of the arrival made by the immigration authorities.

The petition for naturalization must be completed by two citizens of the United States who serve as subscribing witnesses and testify before the court as to the residence and good moral character of the petitioner during so much of the five-year period

as they have known him immediately preceding the date of the petition. Only six months' residence within the county is required of the applicant to make him eligible to petition to the court for admission to citizenship. Two witnesses ordinarily are required, but if, because of residence in two or more places in the county, two witnesses cannot be procured to testify to all of such county residence, other witnesses may be used by him to substantiate the remaining county residence. Residence outside of the county and good moral character may be established by depositions, which must be taken before naturalization examiners. No fee is charged for these depositions. A petition filed under the general provisions of the naturalization law may not be heard until after 90 days from the date it is filed. Naturalization is prohibited during the 30 days preceding the holding of an election general to the jurisdiction of the court.

There are some exceptions to these general provisions, which favor soldiers, sailors, enlisted men in the Navy and the Marine Corps, in whose behalf Congress has permitted the filing of petitions in any convenient court and to have them come on for summary hearing if the applicants have been examined by the Naturalization Service on behalf of the United States Government.

Naturalization Fees.—The fees prescribed for naturalization are as follows: Certificate of arrival, \$5; declaration of intention, \$5; petition for citizenship, \$10; certificate of repatriation, \$1. Where there is no record and the alien arrived prior to June 3, 1921, the immigration authorities will make a record of the entry of such alien upon satisfactory evidence, for which a fee of \$20 is payable to the Commissioner General of Immigration. The fee for a certificate of derivative citizenship is \$15, of which \$5 is for a certificate of arrival.

PETITIONS AND GRANTS

There have been 6,028,517 declarations of intention made by candidates for citizenship, and 3,157,392 certificates of naturalization granted upon

XIV. IMMIGRATION AND POPULATION

the 3,575,171 petitions for naturalization filed by applicants for citizenship since the Act of June 29, 1906, became operative, and up to and including June 30, 1931. During the year 1931, there were 106,272 declarations of intention made, of which 83,474 were by men and 22,798 by women of foreign birth. A total of 145,474 petitioned for admission to citizenship, included in which 108,642 petitions were made by men and 36,832 by women. There were 143,495 who received certificates of citizenship, and of these 106,715 were men and 36,780 were women. The table which follows shows the nationalities of those admitted to citizenship during the year.

NATURALIZED PERSONS

(Fiscal Year, 1930-31)

Country	Number
Repatriated Americans.....	2,427
British Empire:	
Ireland.....	11,109
Canada.....	7,173
England.....	6,773
Scotland.....	4,884
Wales.....	343
Australia.....	94
Others.....	2,143
Total British Empire.....	32,915
Italy.....	22,756
Germany.....	17,592
Poland.....	15,401
Russia.....	9,521
Sweden.....	4,836
Czechoslovakia.....	4,832
Hungary.....	4,421
Serbs, Croats and Slovenes.....	3,318
Greece.....	3,172
Norway.....	2,813
Rumania.....	2,524
Austria.....	2,476
Lithuania.....	1,893
Turkey.....	1,550
Denmark.....	1,482
Switzerland.....	1,225
Netherlands.....	1,180
Finland.....	1,149
France.....	877
Portugal.....	824
Belgium.....	637
Spain.....	594
Syria and the Lebanon.....	588
Latvia.....	399
Albania.....	294
Bulgaria.....	214
Honduras.....	198
Mexico.....	178
Esthonia.....	178
Brazil.....	126
Palestine.....	125
Nicaragua.....	119
Miscellaneous.....	1,057
Total.....	143,495

SPECIAL NATURALIZATION

Women.—On Sept. 22, 1922, Congress passed a law which required women to become citizens independently of the action of their husbands. This law repealed the provisions of the laws by which the wife became a citizen upon the naturalization of her husband and by which she lost her citizenship upon marriage to an alien. Since Sept. 22, 1922, there have been 402,292 women who have made the declaration of intention to become citizens of the United States. There were 315,577 women who filed petitions for naturalization and 292,027 who have been admitted to citizenship. On July 3, 1930, Congress amended the Act of Sept. 22, 1922, to permit native American women racially eligible to naturalization, who had lost citizenship through marriage to aliens, to be naturalized by a most simplified proceeding. The act waived the usual requirements of residence, certificate of arrival, and declaration of intention, and permitted petition to be made to the most convenient court and be heard immediately if appearance were made before a naturalization examiner for examination. On March 3, 1931, further amendment was made, to which reference will be found under the heading of New Legislation.

Exemptions to World War Veterans.—The Act of Congress expired March 4, 1931, which was passed two years before, giving exemptions to veterans of the United States military forces of the World War. Under this Act citizenship was conferred upon 3,224 applicants during the fiscal year 1931, and these, together with the 300,506 previously naturalized under similar legislative exemptions, bring the total up to 303,730 veterans of the World War who received special recognition leading to their citizenship.

Repatriation.—The Act of June 21, 1930, authorized the issuance of certificates of repatriation to those Americans who, during the World War, lost their citizenship through taking an oath of allegiance to enter

POPULATION STATISTICS

the military service of those countries who became associated with the United States in that war.

IMMIGRATION VISAS

The Immigration Act of 1924 requires each "immigrant" to obtain an immigration visa before departing for the United States for permanent residence. These visas are in the custody of the Bureau of Naturalization and constitute records to which reference is made to prove the claim of legal admission that will entitle an alien who arrived in the United States on or after July 1, 1924, to proceed to naturalization. There were 101,721 visas received in the Bureau of Naturalization in 1931, which added to those previously received made a total of 1,886,985.

CITIZENSHIP TRAINING

The Federal textbook on *Citizenship Training*, prepared to provide a complete course of study for adults of foreign birth, leading from appropriate elementary lessons in English to a brief history of the United States with special reference to the form of government, and including practical lessons on citizenship in local communities, is furnished to candidates for naturalization who attend public school classes. Public school officials in 229 communities requested appropriate textbooks during the year 1931, the number furnished being as follows: Part I, Our Language, 13,919;

Part II, Our Community, 9,711; Part III, Our Nation, 10,198.

NEW LEGISLATION

The Act of March 3, 1931, relieves the clerk of court of the work incident to the posting of the name, nativity, and residence of each petitioner, the date and place of his arrival in the United States, date of the final hearing, and the names of witnesses. It also provides for the speedy naturalization, with certain exemptions from the usual requirements of the naturalization laws, of persons eligible to naturalization who had established permanent residence in foreign countries prior to Jan. 1, 1917, and who had lost their citizenship by becoming naturalized under the laws of such foreign country, but returned to the United States before March 3, 1931.

It also further amends the Act of Sept. 22, 1922, to provide that a woman citizen shall not cease to be a citizen of the United States by reason of her marriage to an alien, whether that alien be racially eligible or ineligible to naturalization; and an American-born woman, even though of a race ineligible to naturalization, may reacquire citizenship which has been lost through conditions of marriage by the simplified proceeding available to other native-born women. This procedure may not be followed, however, by women who derived American citizenship through their husbands.

POPULATION STATISTICS

BY LEON E. TRUESDELL

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TOTAL POPULATION

Population growth.—The population of Continental United States on April 1, 1930, the date of the Fifteenth Census, was 122,775,046, as compared with 105,710,620 on Jan. 1, 1920, the date of the last preceding census. In 1790, when the First Census was taken, the population was only 3,929,214. For each of the fifteen censuses,

with the number and percentage of increase over the preceding census, see THE AMERICAN YEAR BOOK for 1930, p. 480.

Intercensal Estimates.—For many purposes it is necessary to have population figures for dates within the decade between one census and the next. As a basis for computing birth rates, death rates, and per capita

XIV. IMMIGRATION AND POPULATION

expenditures, for instance, annual figures are required. To meet this need, the Census Bureau regularly makes estimates for July 1 of each year. Upon the completion of a new census, the estimates made during the preceding decade are revised and brought into agreement with the census returns. The estimates shown in the first column of Table 9 (except those for July 1, 1930) are such revised estimates, obtained by prorating over the period between 1920 and 1930 the actual increase shown by the 1930 census. The revised estimate for July 1, 1929, for example, is obtained by subtracting from the 1930 census population 9/123 of the decennial increase.

BIRTHS AND DEATHS

Registration Area.—Among the most fundamental of the current statistics relative to population are those of births and deaths. Neither

birth registration nor death registration has yet reached such a stage of development in all of the states of the Union that the figures are considered satisfactory for compilation by the Census Bureau. The registration area, which is made up of those states having satisfactory registration systems, is being gradually extended, however, until it now (December, 1931) includes all but two of the states and about 96 per cent of the population. Beginning with 1925 it has been considered that the returns for births and deaths were sufficiently complete to justify their use as a basis for estimating the increase in the population of the United States for successive years subsequent to the census. The estimate for July 1, 1930, as presented in Table 9, is therefore computed on this basis, taking account also of the net immigration during the period from April 1 to July 1, 1930.

TABLE 1.—BIRTHS AND DEATHS IN THE REGISTRATION AREA: 1920 TO 1930

[The birth registration area included 59.8 per cent of the total population of the country in 1920 and 94.7 per cent in 1930; the death registration area included 82.3 per cent of the population in 1920 and 96.2 per cent in 1930]

Year	Births			Deaths		
	Number	Rate per 1,000 of the Population		Number	Rate per 1,000 of the Population	
		Annual	3-year Moving Average		Annual	3-year Moving Average
1930.....	2,203,894	18.9	....	1,343,358	11.3	....
1929.....	2,169,920	18.9	19.2	1,386,363	11.9	11.8
1928.....	2,233,149	19.8	19.7	1,378,675	12.1	11.8
1927.....	2,137,836	20.6	20.3	1,236,949	11.4	11.9
1926.....	1,856,068	20.6	20.9	1,285,927	12.2	11.8
1925.....	1,878,880	21.4	21.6	1,219,019	11.8	12.0
1924.....	1,930,614	22.6	22.2	1,173,990	11.8	12.0
1923.....	1,792,646	22.4	22.5	1,193,017	12.3	12.0
1922.....	1,774,911	22.5	23.1	1,101,863	11.8	11.9
1921.....	1,714,261	24.3	23.5	1,032,009	11.6	12.2
1920.....	1,508,874	23.7	....	1,142,558	13.1	....

FUTURE POPULATION GROWTH

Indications From Present Rate of Increase.—There is much interest in the probable growth of population of the United States over a considerable period into the future. American industry has formed the habit of expecting a continuous and rather

rapid growth in the population, to provide a continuously expanding market for its products; and failing this it will be confronted with the necessity for significant readjustments. It is becoming evident, however, that even the present rate of growth of less than three-fourths of

POPULATION STATISTICS

1 per cent per year is not likely to continue for very long. Long-range estimates made by various men interested in the study of population trends indicate that unless there are radical changes in present conditions, the population of the country will increase (at a rapidly declining rate) until a maximum of between 140,000,000 and 145,000,000 is reached, in 1960 or 1970; and that the population will then begin to decrease.

Declining Rate of Natural Decrease.—Any forecast of the population for even a moderate way into the future must be affected seriously by recent trends in the birth and death rates, especially in the birth rate, which has decreased from 23.7 in 1920 to 18.9 in 1930. While the death rate has also declined, its decrease has been much smaller, and as a net result the rate of natural increase (birth rate minus death rate) has declined from 10.6 per thousand in 1920 to 7.6 per thousand in 1930. The present low death rate (11.3 in 1930) cannot be long maintained, however, in view of the fact that the population is rather rapidly increasing in average age. In 1870, children under 10 years of age formed 26.8 per cent of the population; in 1930, only 19.6 per cent. In 1870, persons 45 years of age and over formed only 14.9 per cent of the population; in 1930, 22.8 per cent. The median age in 1870 was 20.1; in 1930, 26.5 years. The rate of natural increase, therefore, in spite of a slight increase between 1929 and 1930, resulting from a temporary decline in the death rate, is almost sure to be cut into in the near future both by a further decrease in the birth rate and by an increase in the death rate.

POPULATION CLASSIFICATIONS

Urban.—The total population returned in the 1930 census was 122,775,046. Of this number, 68,954,823, or 56.2 per cent, were living in urban territory, which includes all cities and other incorporated places having 2,500 inhabitants, together with a few other places classified as urban under a

special rule. The percentage of the population urban in 1920 was 51.4; in 1910, 45.8; in 1900, 40.0; in 1890, 35.4; and in 1880, the earliest year for which figures are available on the present basis, 28.6.

Rural.—All population living outside the urban territory, as defined above, is classified as rural. The rural population in 1930 was 53,820,223, comprising 30,157,513 persons living on farms in rural territory (rural-farm population), and 23,662,710 not living on farms (rural-nonfarm population). The total farm population, including the small number of persons living on farms in urban territory, was 30,445,350.

TABLE 2.—POPULATION OF THE UNITED STATES, URBAN AND RURAL: 1930 AND 1920

[Increases shown for 1920 represent increase over 1910 figures]

Class of Population	1930 (April 1)	1920 (January 1)
Total population.....	122,775,046	105,710,620
Increase: Number..	17,064,426	13,738,354
Per cent.....	16.1	14.9
Urban population.....	68,954,823	54,304,603
Increase: Number..	14,650,220	12,138,483
Per cent.....	27.0	28.8
Urban-farm.....	287,837	255,629
Rural population.....	53,820,223	51,406,017
Increase: Number..	2,414,206	1,599,871
Per cent.....	4.7	3.2
Rural-farm.....	30,157,513	31,358,640
Rural-nonfarm.....	23,662,710	20,047,377
Total farm population..	30,445,350	31,614,269
Per cent distribution:		
Total population...	100.0	100.0
Urban.....	56.2	51.4
Rural.....	43.8	48.6
Rural-farm....	24.6	29.7
Total farm.....	24.8	29.9

Color, Nativity and Sex.—The population of the United States in 1930 comprised 108,864,207 white persons, 11,891,443 Negroes; 1,422,533 Mexicans; 332,397 Indians, and 264,766 persons of other races, mainly Chinese, Japanese, and Filipinos. Of the white population, 70,136,614 were natives of native parentage; 25,361,186 were natives of foreign or mixed parentage, and 13,366,407 were foreign born.

XIV. IMMIGRATION AND POPULATION

TABLE 3.—POPULATION OF THE UNITED STATES BY COLOR, NATIVITY AND SEX: 1930

(With citizenship of foreign-born white)

	Total	Male	Female
Total.....	122,775,046	62,137,080	60,637,966
White.....	108,864,207	55,163,854	53,700,353
Native.....	95,497,800	48,010,145	47,487,655
Native parentage.....	70,136,614	35,460,001	34,676,613
Foreign or mixed parentage.....	25,361,186	12,550,144	12,811,042
Foreign born.....	13,366,407	7,153,709	6,212,698
Naturalized.....	7,859,193	4,332,288	3,526,905
First papers.....	1,246,521	941,985	304,536
Alien.....	3,787,086	1,650,313	2,136,773
Unknown.....	473,607	229,123	244,484
Negro.....	11,891,143	5,855,669	6,035,474
Other races.....	2,019,696	1,117,557	902,139
Mexican.....	1,422,533	758,674	663,859
Indian.....	332,397	170,350	162,047
Chinese.....	74,954	59,802	15,152
Japanese.....	138,834	81,771	57,063
All other.....	50,978	46,960	4,018

Foreign-born Population.—The total foreign-born population of the United States in 1930 was 14,204,149, comprising 13,366,407 foreign-born whites; 98,620 foreign-born Negroes; and 739,122 of other races, mainly Mexicans, Chinese, Japanese, and Filipinos. The increase in the total foreign-born population amounted to 2 per cent, as compared with an increase of 18.3 per cent in the native population. The foreign-born white population increased only eight-tenths of 1 per cent. (This percentage is computed on the basis of 1920 figures adjusted by deducting the estimated number of Mexicans included with the foreign-born white in

TABLE 4.—FOREIGN-BORN WHITE POPULATION OF THE UNITED STATES, BY COUNTRY OF BIRTH AND SEX: 1930

Country of Birth	Total	Male	Female
All countries.....	13,366,407	7,153,709	6,212,698
England.....	808,672	412,065	396,607
Scotland.....	354,323	181,654	172,669
Wales.....	60,205	32,189	28,016
Northern Ireland.....	178,832	81,088	97,744
Irish Free State.....	744,810	324,841	419,969
Norway.....	347,852	196,349	151,503
Sweden.....	595,250	333,623	261,627
Denmark.....	179,474	109,975	69,499
Germany.....	1,608,814	843,136	765,678
Poland.....	1,268,583	681,425	587,158
Czechoslovakia.....	491,638	255,485	236,153
Austria.....	370,914	193,636	177,278
Hungary.....	274,450	139,828	134,622
Yugoslavia.....	211,416	131,351	80,065
Russia.....	1,153,624	612,962	540,662
Latvia and Estonia.....	24,223	13,454	10,769
Lithuania.....	193,606	110,969	82,637
Greece.....	174,526	129,101	45,425
Italy.....	1,790,424	1,042,621	747,803
Canada—French.....	370,852	187,523	183,329
Canada—Other.....	907,569	429,567	478,002
Mexico.....	23,743	12,737	11,006
All other countries.....	1,232,607	698,130	534,477

POPULATION STATISTICS

1920, the adjusted total being 13,255,-394.) Of the total foreign-born population, 7,921,645 were naturalized; 1,267,026 had taken out their first papers; 4,514,151 were alien, and for 501,327, no report as to citizenship was received. Citizenship figures for the foreign-born white population are given in Table 4.

Age Classification.—The age classification in the Census returns is

based on age at last birthday, that is, age in completed years. The 1930 population of the United States is presented in Table 5 by age and sex for 1930, with the percentage distribution by age for the last four censuses. The gradual change in the age composition of the population is brought out most clearly by a comparison of the percentages for various census years.

TABLE 5.—POPULATION OF THE UNITED STATES BY AGE AND SEX, 1930, WITH AGE DISTRIBUTION: 1900 to 1930

Age (years)	Number		
	Total	Male	Female
All ages.....	122,775,046	62,137,080	60,637,966
Under 5.....	11,444,390	5,806,174	5,638,216
Under 1.....	2,190,791	1,112,171	1,078,620
5 to 9.....	12,607,609	6,381,108	6,226,501
10 to 14.....	12,004,877	6,068,777	5,936,100
15 to 19.....	11,552,115	5,757,825	5,794,290
20 to 24.....	10,870,378	5,336,815	5,533,563
25 to 29.....	9,833,608	4,860,180	4,973,428
30 to 34.....	9,120,421	4,561,786	4,558,635
35 to 44.....	17,198,840	8,816,319	8,382,521
45 to 54.....	13,018,083	6,803,569	6,214,514
55 to 64.....	8,396,898	4,367,500	4,029,398
65 to 74.....	4,720,609	2,409,459	2,311,150
75 and over.....	1,913,196	915,752	997,444
Unknown.....	94,022	51,816	42,206
21 and over.....	72,943,624	37,056,757	35,886,867

Age (years)	Per Cent Distribution			
	1930	1920	1910	1900
All ages.....	100.0	100.0	100.0	100.0
Under 5.....	9.3	10.9	11.6	12.1
Under 1.....	1.8	2.1	2.4	2.5
5 to 9.....	10.3	10.8	10.6	11.7
10 to 14.....	9.8	10.1	9.9	10.6
15 to 19.....	9.4	8.9	9.9	9.9
20 to 24.....	8.9	8.8	9.8	9.7
25 to 29.....	8.0	8.6	8.9	8.6
30 to 34.....	7.4	7.6	7.6	7.3
35 to 44.....	14.0	13.4	12.7	12.1
45 to 54.....	10.6	9.9	9.1	8.4
55 to 64.....	6.8	6.2	5.5	5.3
65 to 74.....	3.8	3.3	3.0	2.9
75 and over.....	1.6	1.4	1.3	1.2
Unknown.....	0.1	0.1	0.2	0.3

Illiteracy.—The Census Bureau defines as illiterate any person 10 years of age and over who is not able to read and write, either in English or in some other language. No specific

test of ability to read and write was prescribed, but the enumerators were instructed in 1930 *not* to return the answer "Yes" (which would classify the person as literate) simply be-

XIV. IMMIGRATION AND POPULATION

cause a person was able to write his or her name. In 1930, 4.3 per cent of the population 10 years of age and over were returned as illiterate. The percentage of illiteracy in 1920 was 6.0; in 1910, 7.7; in 1900, 10.7; in 1890, 13.3; in 1880, 17.0.

TABLE 6.—ILLITERACY IN THE POPULATION 10 YEARS OLD AND OVER, BY COLOR AND NATIVITY: 1930

Color and Nativity	Total Number	Illiterate	
		Number	Per Cent
All classes...	98,723,047	4,283,753	4.3
White.....	87,980,667	2,407,218	2.7
Native.....	74,763,739	1,103,134	1.5
Native parent- age.....	53,876,411	986,469	1.8
Foreign or mixed parentage....	20,887,328	116,665	0.6
Foreign born....	13,216,928	1,304,084	9.9
Negro.....	9,292,556	1,513,892	16.3
Other races.....	1,449,824	362,643	25.0

7. Sixty per cent of the male population 15 years of age and over were returned as married in 1930, which may be compared with 59.2 per cent in 1920; 55.8 per cent in 1910; 54.5 per cent in 1900; and 53.9 per cent in 1890. For the female population likewise the census figures indicate a continued increase in the proportion married, the percentages being, 61.1 in 1930; 60.6 in 1920; 58.9 in 1910; 57.0 in 1900; and 56.8 in 1890.

TABLE 7.—MARITAL CONDITION OF THE POPULATION 15 YEARS OLD AND OVER, BY SEX: 1930 AND 1920

Sex and Marital Condition	Number, 1930	Per Cent	
		1930	1920
Male, total.....	43,881,021	100.0	100.0
Single.....	14,953,712	34.1	35.1
Married.....	26,327,109	60.0	59.2
Widowed.....	2,025,036	4.6	4.8
Divorced.....	489,478	1.1	0.6
Unknown.....	85,686	0.2	0.3
Female, total....	42,837,149	100.0	100.0
Single.....	11,306,653	26.4	27.3
Married.....	26,170,756	61.1	60.6
Widowed.....	4,734,207	11.1	11.1
Divorced.....	573,148	1.3	0.8
Unknown.....	52,385	0.1	0.1

Marital Condition.—The classification as to marital condition, that is, whether single, married, widowed, or divorced, is presented for the population 15 years old and over in Table

TABLE 8.—GAINFUL WORKERS IN THE POPULATION OF THE UNITED STATES, BY SEX: 1900 TO 1930

Item	Census Year	Male	Female
Total population	1930	62,137,080	60,637,966
	1920	53,900,431	51,810,189
	1910	47,332,277	44,639,989
	1900	38,816,448	37,178,127
Persons 10 years old and over	1930	49,949,798	48,773,249
	1920	42,289,969	40,449,346
	1910	37,027,558	34,552,712
	1900	29,703,440	28,246,384
Gainful workers (persons reporting a gainful occupation)	1930	38,053,795	10,778,794
	1920	33,064,737	8,549,511
	1910	30,091,564	8,075,772
	1900	23,753,836	5,319,397
Per cent of total population	1930	61.2	17.8
	1920	61.3	16.5
	1910	63.6	18.1
	1900	61.2	14.3
Per cent of population 10 years old and over	1930	76.2	22.1
	1920	78.2	21.1
	1910	81.3	23.4
	1900	80.0	18.8

POPULATION STATISTICS

Gainful Workers.—Persons 10 years old and over who usually work at a gainful occupation are classified as gainful workers. The whole number of gainful workers returned in 1930 was 48,832,589. This number includes both persons working for wages and persons conducting business on their own account, such as farmers and small merchants. Persons temporarily unemployed at the time of the census are included in the number of gainful workers.

The 38,053,795 male gainful workers 10 years of age and over returned in 1930 may be classified according to the industry in which they work, as follows: Agriculture, 9,568,347; forestry and fishing, 266,876; extraction of minerals, 1,147,770; manufacturing and mechanical industries, 11,901,247; transportation, 3,990,875; trade, 5,820,642; public service (not elsewhere classified), 934,581; professional serv-

ice, 1,663,049; domestic and personal service, 1,662,707; and industry not specified, 1,097,701.

Unemployment.—In the Census of Unemployment taken in 1930, 2,429,062 gainful workers were returned in Unemployment Class A, that is, as out of a job, able to work, and looking for a job, and 758,585 more were returned in Unemployment Class B, that is, as having jobs but on layoff without pay, these figures excluding those sick or voluntarily idle. Gainful workers in Class A constituted 5 per cent of the whole number of gainful workers, or 2 per cent of the total population.

MARRIAGE AND DIVORCE

Data.—Marriage and divorce figures have been compiled for various periods beginning with 1867 and have been published annually beginning with 1922.

TABLE 9.—MARRIAGES AND DIVORCES IN THE UNITED STATES: 1922 TO 1930

Year	Population (Estimated as of July 1)	Marriages		Divorces		
		Number	Per 1,000 of Population	Number	Per 1,000 of Population	Per 100 Marriages Performed
1930.....	123,191,000	1,128,280	9.16	191,591	1.56	17.0
1929.....	121,526,429	1,232,559	10.14	201,468	1.66	16.3
1928.....	119,861,607	1,182,497	9.87	195,939	1.63	16.6
1927.....	118,196,785	1,201,053	10.16	192,037	1.62	16.0
1926.....	116,531,963	1,202,574	10.32	180,353	1.55	15.0
1925.....	114,867,141	1,188,334	10.35	175,449	1.53	14.8
1924.....	113,202,319	1,184,574	10.46	170,952	1.51	14.4
1923.....	111,537,497	1,229,784	11.03	165,096	1.48	13.4
1922.....	109,872,675	1,134,151	10.32	148,815	1.35	13.1

Classification of Divorces.—The divorces as reported are classified according to cause, party to whom granted, etc. Of the 189,863 divorces granted in 1930 for which detailed information was received, 52,554 were granted to the husband, and 137,309 to the wife. Classified according to cause: 79,381 were granted for cruelty; 54,802 for desertion; 14,841 for adultery; 7,718 for neglect to provide; 3,168 for drunkenness; and 29,953 for other causes and combinations of causes. Of the whole number of divorces, 163,320 were reported as uncontested. Cases where the

parties had been married less than five years formed 36.9 per cent of the divorces, and another 28.8 per cent was made up of cases where the parties had been married from 5 to 9 years. In only 71,736 cases, or 37.8 per cent of the cases, was it reported that children were affected by the divorce.

Annulments.—In addition to the divorces listed, there were reported in 1930, 4,370 cases of annulment of marriage, as compared with 4,408 in 1929. More than half of the annulments in both years were reported from New York and California.

XIV. IMMIGRATION AND POPULATION

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

(For further information, the reader may address the following organizations)

GENERAL

AMERICAN COLONIZATION SOCIETY, 516 Colorado Bldg., Washington, D. C.
CITIES CENSUS COMMITTEE, 200 Fifth Ave., New York City.
CITIZENS' COMMITTEE OF ONE THOUSAND, 100 Fifth Ave., New York City.
LEAGUE OF FOREIGN-BORN CITIZENS, 342 Madison Ave., New York City.
NATIONAL LIBERAL IMMIGRATION LEAGUE, 128 Madison Ave., New York City.
NATURALIZATION AID LEAGUE, 175 E. Broadway, New York City.
NORTH AMERICAN CIVIC LEAGUE FOR IMMIGRANTS, 289 Fourth Ave., New York City.
SCRIPPS FOUNDATION FOR RESEARCH IN POPULATION PROBLEMS, Miami University, Oxford, O.
TRADE UNION IMMIGRATION BUREAU, 201 Second Ave., New York City.

RACES

ALLIED CITIZENS OF AMERICA, INC., 370 Seventh Ave., New York City.
AMERICAN ETHNOLOGICAL SOCIETY, American Museum of Natural History, New York City.
AMERICAN INDIAN DEFENCE ASSN., INC., 221 W. 57th St., New York City.
AMERICAN INDIAN LEAGUE, 24 E. 74th St., New York City.
AMERICAN JEWISH COMMITTEE, 171 Madison Ave., New York City.
AMERICAN JEWISH CONGRESS, 33 W. 42nd St., New York City.
AMERICAN SCANDINAVIAN FOUNDATION, 25 W. 45th St., New York City.
AMERICAN UNION OF ROUMANIAN JEWS, 799 Broadway, New York City.
ANCIENT ORDER OF HIBERNIANS, 937 W. 54th Place, Chicago, Ill.
ASSOCIATION GENERALE DES ALASACIENS-LORRAINS D'AMERIQUE, 46 W. 46th St., New York City.
BAVARIAN NATIONAL ASSN. OF N. A., 758 Broadway, Buffalo, N. Y.
CENTRO HISPANO-AMERICANO, 353 W. 17th St., New York City.

CENTRO VASCO AMERICANO SOCIETY, 48½ Cherry St., New York City.
ENGLISH-SPEAKING UNION OF THE U. S., 19 W. 44th St., New York City.
FEDERATION DE L'ALLIANCE FRANCAISE AUX ETATS UNIS ET AU CANADA, 32 Nassau St., New York City.
FEDERATION OF HUNGARIAN JEWS IN AMERICA, 799 Broadway, New York City.
FEDERATION OF POLISH HEBREWS OF AMERICA, 32 Union Square, New York City.
FEDERATION OF RUSSIAN POLISH HEBREWS OF AMERICA, 1824 Lexington Ave., New York City.
FOREIGN LANGUAGE PUBLISHERS' ASSN. OF THE U. S., INC., 110 E. 42nd St., New York City.
FRANCE-AMERICA SOCIETY, INC., 270 Madison Avenue, New York City.
GENERAL NETHERLANDS ASSN. GROUP OF N. A., 179 S. Trenchard St., Yonkers, N. Y.
HEBREW SHELTERING AND IMMIGRANT AID SOCIETY OF AMERICA, 425 Lafayette St., New York City.
HOLLAND SOCIETY OF N. Y., 90 West Street, New York City.
HUGUENOT SOCIETY OF AMERICA, 2 W. 45th St., New York City.
HUNGARIAN SOCIETY OF N. Y., 1440 Broadway, New York City.
INDIAN RIGHTS ASSN., 995 Drexel Building, Philadelphia, Pa.
INTERNATIONAL SERBIAN EDUCATION COMMITTEE, 1049 Park Ave., New York City.
JAPANESE ASSN., INC., 1775 Broadway, New York City.
JEWISH CONGRESS COMMITTEE, 8 W. 40th St., New York City.
JEWISH NATIONAL WORKERS' ALLIANCE OF AMERICA, 189 Second Ave., New York City.
LAKE MOHONK INDIAN CONFERENCE, Smiley, Mohonk Lake, N. Y.
LITHUANIAN ALLIANCE OF AMERICA, 307 W. 30th St., New York City.
LOYAL SERB SOCIETY SRBADIYA, 443 W. 22nd St., New York City.

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

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| <p>MEXICAN SOCIETY OF NEW YORK, 16 E. 23rd St., New York City.</p> <p>NATIONAL ASSN. FOR ADVANCEMENT OF COLORED PEOPLE, 69 Fifth Ave., New York City.</p> <p>NATIONAL FEDERATION OF UKRAINIAN JEWS OF AMERICA, INC., 505 E. 82nd St., New York City.</p> <p>NATIONAL YOUNG JUDEA, 111 Fifth Ave., New York City.</p> <p>NETHERLAND AMERICAN FOUNDATION, 551 Fifth Ave., New York City.</p> <p>ORDINE FIELI D'ITALIA IN AMERICA, 231 E. 14th St., New York City.</p> <p>POLISH FEDERATION OF NEW YORK CITY, INC., 705 Courtlandt St., New York City.</p> <p>POLISH NATIONAL ALLIANCE, 180 Second Ave., New York City.</p> <p>RUSSIAN NATIONAL SOCIETY, 5 Columbus Circle, New York City.</p> | <p>SONS OF ITALY, 231 E. 14th St., New York City.</p> <p>THESSALIAN SOCIETY, 667 Eighth Ave., New York City.</p> <p>UKRAINIAN NATIONAL COMMITTEE OF THE U. S., 30 E. 7th St., New York City.</p> <p>UNITED ROUMANIAN JEWS OF AMERICA, INC., 799 Broadway, New York City.</p> <p>UNIVERSAL NEGRO IMPROVEMENT ASSN. AND AFRICAN COMMISSION LEAGUE, 56 W. 135th St., New York City.</p> <p>YOUNG MEN'S HEBREW ASSN., 31 W. 110th St., New York City.</p> <p>YOUNG WOMEN'S CHRISTIAN ASSOCIATION, 129 East 52nd Street, New York City.</p> <p>ZIONIST ORGANIZATION OF AMERICA, 111 Fifth Ave., New York City.</p> |
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DIVISION XV

SOCIAL PROBLEMS AND CONDITIONS

CRIME CONDITIONS AND TREATMENT

BY BENNET MEAD

STATISTICIAN, U. S. BUREAU OF PRISONS, DEPARTMENT OF JUSTICE

POLICE STATISTICS

Origin and Scope.—During 1931 the United States Bureau of Investigation, Department of Justice, continued the publication of monthly crime data, received from local police departments throughout the country. Monthly statistics of this kind were collected for the first time in this country, beginning in January, 1930, by the Committee on Uniform Crime Records of the International Association of Chiefs of Police. This work was taken over Sept. 1, 1930, by the Bureau of Investigation, after authorization by Congress under a law passed in June, 1930. Annual statistics were collected for the first time covering 1930, concerning not only major offenses known to the police (as in the monthly reports), but also major offenses cleared by arrest, persons charged, and persons arrested, for major offenses.

Growth of Area.—From the first there has been a steady growth in the number of reporting police departments, and in the population represented. The latest monthly report, covering November, 1931, shows data covering 760 of the 982 cities in the United States with a census population in 1930 of 10,000 and over. These cities had a total population in 1930 of 46,706,113, or 80 per cent of the aggregate population in cities of 10,000 or more. In comparison with these figures, the initial report, for January, 1930, covered only 400 cities, and represented a total popu-

lation of about 20,000,000. There was, therefore, an increase up to November, 1931, of about 90 per cent in the number of reporting cities, and over 130 per cent in the population represented. There has also been a considerable development of reporting by the smaller cities and rural areas. In a number of states, central agencies are being developed, capable of collecting state-wide data. An especially well-organized and successful experiment in state-wide collection has been carried out for the past two years in Ohio by the Ohio Institute.

Annual Statistics.—Acknowledgment is made of the courtesy of J. Edgar Hoover, Director of the U. S. Bureau of Investigation, in making available the annual police statistics which are here summarized. In issuing the first annual statistics, covering the year 1930, it has been deemed best by the Bureau to emphasize quality, rather than quantity. The data have, therefore, been restricted to 77 cities having a population of 25,000 or more, which had furnished complete and consistent monthly and annual reports, comprising Return A, the monthly report, for every month of the year; Return B, giving annual figures concerning offenses known to the police and offenses cleared by arrest, and Return C, giving annual data as to persons charged and persons arrested. The 77 cities thus selected had an aggregate population of 8,331,236 on April 1, 1930,

CRIME CONDITIONS AND TREATMENT

according to the Federal census. Separate figures have been compiled for three groups of cities, as follows: (1) Cities of 25,000 but under 50,000, numbering 38, with a total population of 1,337,619; (2) Cities of 50,000 but under 100,000, numbering 16, with a total population of 991,039; and (3) Cities of 100,000 and over, numbering 23, with an aggregate population of 6,002,578.

Known Offenses.—The figures in the first column of the following table show that in the cities here represented, larcenies were more frequent than any other class of offenses covered. Auto thefts ranked second, followed by robbery and by the various classes of offenses against persons. An interesting fact is that for every offense shown except rape, the cities of 100,000 or more have a higher rate than either of the other classes of cities. This situation suggests that the larger the city, the higher the crime rates are likely to be, and we are led to wonder how far this is due to greater density of population in the larger cities, to greater amounts of property in proportion to population, or to other factors. But all theorizing along such lines is checked, when it is noted that the cities of intermediate size

(50,000 to 99,999) had rates which were lower for most offenses than the rates for the small cities (under 50,000). We must await further evidence, then, before accepting as established, the generalization that crime rates *uniformly* increase with increasing size of cities. The data here presented, since they represent only a minor fraction of the urban population, and may not be accurately representative of conditions in the several classes of cities in the country as a whole, cannot be accepted without qualification. Furthermore, it must be recognized that while these data are believed, from the available evidence, to be substantially accurate, they have been compiled by police departments which in many cases have begun the work only recently, and have not had time to perfect their routine, or to insure 100 per cent completeness in the returns. Hence, it is fair to conclude that the crime rates represent a minimum, rather than the full number of offenses known to the police, and that complete data for the same group of cities might show somewhat higher rates than those presented in the following table.

OFFENSES KNOWN TO THE POLICE, 1930

(Ratio Per 100,000 Population for Selected Cities with Population of 25,000 or More*)

Offense	Total	Cities 25,000 to 49,999	Cities 50,000 to 99,999	Cities 100,000 or More
Homicide:				
Non-negligent.....	8.4	8.1	3.9	9.2
Negligent.....	5.2	3.7	5.2	5.6
Rape.....	5.0	5.8	5.4	4.7
Assault (aggravated).....	57.9	43.8	28.1	66.0
Robbery.....	105.1	72.5	70.2	118.1
Burglary.....	339.2	291.2	304.6	355.6
Larceny (except auto):				
\$50 or more.....	129.6	112.0	81.7	141.4
Under \$50.....	607.3	562.9	505.2	634.0
Auto theft.....	457.3	360.9	387.3	490.3

* Compiled from data furnished by the United States Bureau of Investigation, derived from Return B, by police departments. Ratios based upon population April 1, 1930, as reported by the United States Bureau of the Census.

Clearances.—A "clearance" is defined as an offense known to the police which is "cleared" by the arrest of one or more offenders. A

XV. SOCIAL PROBLEMS AND CONDITIONS

number of different offenses may be "cleared" in this sense by the arrest of a single offender. Statistics of clearances, if accurately compiled, afford a rough index of the degree of success attained by the police in dealing with crime. The following table summarizes the data concerning offenses cleared by arrest in 1930 in the same group of cities for which data were given in the previous table. Several significant conclusions may be drawn. In the first place, the percentage of clearances was strikingly low for the principal offenses against property, but was somewhat higher for robbery than for burglary and theft. Such low percentages indicate that in a considerable majority of cases, the police fail to arrest anyone for property offenses. Second, these low percentages also afford significant evidence that the police depart-

ments in these cities have probably not appreciably overstated, either by accident or intent, the number of clearances, in order to make a more favorable showing. In the third place, the relatively high clearance percentages for the chief offenses against persons not only show a higher degree of police effectiveness in dealing with such offenses, but suggest that the police problem in handling these offenses may be easier of solution. Fourth, the cities of 100,000 and over had for nearly all offenses, decidedly lower clearance percentages than the smaller cities. But comparison of the figures for the other two classes of cities shows no uniform direction for the differences, and thus affords no clear indication as to relative police effectiveness in the small cities and in those of intermediate size.

OFFENSE CLEARANCES, 1930

(Percentage of Clearances to Total Offenses Known to the Police, for Selected Cities With Population of 25,000 or More*)

Offense	Total	Cities 25,000 to 49,999	Cities 50,000 to 99,999	Cities 100,000 or More
Homicide:				
Non-negligent.....	78.2	84.4	†	76.4
Negligent.....	84.8	†	†	92.5
Rape.....	85.7	†	†	85.4
Assault (aggravated).....	73.9	89.9	90.3	70.4
Robbery.....	34.4	40.9	49.6	32.0
Burglary.....	26.3	37.4	33.8	23.2
Larceny (except auto):				
\$50 or more.....	28.2	41.9	41.6	24.6
Under \$50.....	24.5	29.7	33.7	22.3
Auto theft.....	20.5	30.7	11.7	20.0

* Data furnished by the United States Bureau of Investigation, and based on Return B, from police departments.

† Percentage not shown, as base (number of offenses) is less than 100.

Arrests and Clearances.—The next table compares the number of persons arrested with the number of clearances by arrest, for the same cities represented in the statistics previously presented. This table shows roughly the degree to which more than one offense was cleared by a single arrest. For example, 3,014 robberies were reported as cleared by the arrest of only 2,561 persons. It is interesting to note that clearances exceeded arrests for all of the property offenses except larceny, whereas the number of persons arrested was in excess of the offenses cleared by arrest, for all of the offenses against persons here shown, except assault.

CRIME CONDITIONS AND TREATMENT

ARRESTS AND CLEARANCES, 1930

(Persons Arrested and Offenses Cleared by Arrest in Selected Cities With Population of 25,000 or More*)

Offense	Persons Arrested	Offenses Cleared by Arrest	Excess or Shortage (—) of Clearances over Arrests	
			Number	Per Cent
Homicide:				
Non-negligent.....	626	545	—81	—12.9
Negligent.....	415	369	—46	—11.1
Rape.....	443	354	—89	—20.0
Assault (aggravated).....	3,520	3,565	45	1.3
Robbery.....	2,561	3,014	453	17.7
Burglary.....	5,733	7,423	1,690	29.5
Larceny (except auto).....	15,555	15,472	—83	—0.5
\$50 or more.....	†	3,049	†	†
Under \$50.....	†	12,423	†	†
Auto theft.....	5,572	7,813	2,241	40.2

* Compiled from data furnished by the United States Bureau of Investigation, and based on Returns B and C, from police departments.

† Not separately tabulated.

HOMICIDE

Mortality Data.—Census statistics of homicide deaths in 1930 are not available at this writing. Between 1926 and 1929 the number of officially recorded homicides in the United States varied from 10,000 to 10,500, according to estimates based on data for the death registration area. The homicide death rate of this area in 1929 was 84 per 1,000,000 inhabitants. The significance of the census data has been fully discussed in previous issues of this publication. In view of space limitations, and the unavailability of 1930 data, no further discussion seems advisable.

STATISTICS OF PRISONERS

Annual Census.—The 1928 prison census report was issued during the past year. It is the third annual report on prisoners in state and Federal prisons and reformatories. The population of all the institutions of this class in the United States was about 119,000 on Jan. 1, 1929, as estimated from the census data. The corresponding figure on Jan. 1, 1932, may be conservatively estimated at 140,000, in view of the continued upward trend shown by the census data. During 1928, about 57,000 prisoners were received from the courts by the pris-

ons and reformatories. The number received in 1931 may be conservatively estimated at 65,000. Between 1910 and 1931, the number of prisoners received grew from 32 to about 55 per 100,000 general population. The long-time trend has been steadily upward for most offense groups, and has been especially marked for robbery and violation of liquor laws. For further information, the reader is referred to the census report, "Prisoners in State and Federal Prisons and Reformatories: 1928."

RESEARCH WORK

Wickersham Commission.—The President's National Commission on Law Observance and Enforcement terminated its work in the summer of 1931, leaving behind an impressive series of reports. A convenient brief summary, including a list of the individual reports, entitled "Crime and the Wickersham Commission," by Winthrop D. Lane, appeared in *The Survey* for Nov. 1, 1931.

"Prisons of Tomorrow."—An excellent survey of the status, needs, and prospects of our penal institutions, comprising articles by a number of competent authorities, makes up the November, 1931 issue of the

XV. SOCIAL PROBLEMS AND CONDITIONS

Annals of the American Academy of Political and Social Science, which is entitled, "Prisons of Tomorrow."

Judicial Administration Studies.

—The Institute of Law of The Johns Hopkins University has continued its exhaustive studies of judicial administration in Ohio and Maryland, in collaboration with State Judicial Councils, and is undertaking similar studies in several other states. Other important experimental studies in the same field are being made by Columbia and the University of California. These studies are significant as laying the foundation for the

ultimate development of nation-wide judicial statistics, which must be added to the present police and penal statistics before we shall have adequate data on all the basic phases of crime and law enforcement.

Other Studies.—Space limits permit only brief reference to three other important types of research, namely: the studies of parole predictability by various investigators, on the models of the studies by Burgess and the Gluecks; the studies of delinquency areas, by Shaw and others; and the case studies of offenders by numerous investigators.

PRISONS AND PENAL CONDITIONS

By WILLIAM B. COX

SECRETARY, NATIONAL SOCIETY OF PENAL INFORMATION

NEED OF NEW IDEAS

While 1931 has shown improvement in general penal conditions, there have been several major disturbances similar to those of 1929. These have occurred in spite of the efforts of prison administrators to guard against them. Investigation of more than sixty major institutions this year definitely indicates that penal authorities are fully conscious of the futility of present methods and of the need of adopting new ideas if their institutions are properly to serve their function of protecting society. This can be accomplished only through the development of a program that will have as its major object the ultimate reformation of the prisoner. No longer can we forget that more than ninety per cent of those incarcerated are released to take their place again in the world at large.

EMPLOYMENT IN PRISONS

Michigan.—There has been very little if any increase in the employment of inmates. While it is true that in some states more inmates are working than heretofore, the increase in population has tended in most instances to offset the new developments. An example of the large

amount of idleness is found in the Jackson, Michigan, institution. Out of a combined population of 5547 men housed in the old and new prison plants, 41.3 per cent were inactive. Of this number 32.7 per cent were unassigned; 4.1 per cent were assigned but not working; 2.3 per cent were incapacitated and 2.2 per cent were sick, held for observation or undergoing punishment.

Ohio.—A similar condition prevails throughout the Ohio institutions. In all four of the major institutions the authorities are at their wits' end in an endeavor to have even a semblance of work for a large number of their prisoners. Every detail is overmanned to such an extent that inmates are in each other's way, impairing their efficiency and establishing habits which will be detrimental to their success when they find employment upon release.

Wisconsin.—The State Prison in Waupun, Wisconsin, has established a number of farm and reforestation units in an effort to overcome idleness. The latter development is one which a number of states, especially New York, might well consider as a major project.

PRISON AND PENAL CONDITIONS

CONTRACT LABOR

The Hawes-Cooper bill, a Federal law, which prohibits the shipment of prison-made goods from the state in which such goods are manufactured into other states where laws have been enacted prohibiting the sale of such goods within their borders, is already making itself felt, in spite of the fact that it will be two years before the law becomes effective. It is taken for granted that most states will enact such prohibitive legislation, with the result that most contractors of prison labor will find it unprofitable to continue their contracts should their sales be limited within the borders of the states where their products are manufactured. Most of such contracts are at present confined to the smaller states where the market is naturally limited. Contracts for prison labor have been withdrawn in Maine, while in New Hampshire and Maryland the contracts have been renewed at a lower compensation for the work done. In the former State the contract originally provided that the contractor pay to the state \$1.20 *per diem* for the labor of each man performing his daily task. The new contract calls for a *per diem* rate of only 60 cents.

OVERCROWDING

Overcrowding continues to present a major problem of prison control. There are only a few institutions where the population has not increased to the point where control is both difficult and dangerous, and where it is practically impossible to provide habitable quarters for all the inmates. On October 27, 1931, the Missouri State Prison at Jefferson City reached a total of 4545 inmates, the largest in the history of the institution. The State Prison for Men at Columbus, Ohio, the Reformatory for Women at Marysville, Ohio and the Mansfield, Ohio, Reformatory for Men are also grossly overcrowded. At Marysville women are quartered two to a room and in an almost unlivable basement dormitory. At Mansfield basement dormitories are

also used which are unfit for human habitation and the new dormitory outside the walls is crowded with 700 inmates sleeping in double-decked bunks jammed alongside of each other. Under such conditions the Superintendents have to use the utmost ingenuity to house and board their charges without attempting any constructive rehabilitative measures. Such a condition is particularly vicious in institutions intended to be reformatories and dealing with younger offenders. In addition to the overcrowding both of these institutions are so seriously under-manned that proper supervision is impossible.

THE WICKERSHAM REPORT

The National Commission on Law Observance and Enforcement (Wickersham Commission) published its *Report on Penal Institutions, Probation and Parole*, June 23, 1931. While this report has caused wide discussion and comment, it is generally agreed that as far as it goes the conclusions are not only sound but essentially worthy of the attention and action of all legislative bodies. Its greatest weakness is that it fails to stress the fact that the failure of our prison administrators to overcome the evils and shortcomings brought out in the report were due mainly to the lack of intelligent legislative action and to general public indifference. There can be no question but that our prisons will remain human scrap heaps just so long as this indifference to such a great social need is permitted to continue. An aroused public conscience is the only way to force legislation of a constructive character. Nothing is accomplished by placing all the blame for present conditions on the shoulders of wardens. Most of these officials freely admit that present methods must be changed. In all fairness to them we must realize that they can accomplish little in setting up a well-rounded institutional program, educational in its broadest sense, if they are denied a sufficient staff and adequate appropriations with which to work.

RIOTS AND OTHER DISTURBANCES

Joliet.—The major prison riots of the year occurred in Illinois. At both the old prison at Joliet and the new one at Stateville, it was necessary to use guns and gas to quell the rebellious prisoners. The first of these riots occurred March 14 in the old prison. More than 1100 of the inmates ran amuck and before order was restored one convict was shot to death and much property damage was done. The disorder started in the dining hall and has been attributed to two episodes which occurred within three weeks before the riot: the killing by guards in ambush of three inmates who were attempting escape and the death from heart disease of a convict who was shackled and undergoing punishment in a solitary cell. It was customary in this institution at that time to cuff men in a standing position to the bars of the cell while in solitary.

Stateville.—On March 18 more than 1800 inmates of the Stateville Prison broke loose and set fire to the prison kitchen and dining hall and most of the factories located within the prison walls. The uprising in this institution was laid at the door of the Parole Board because of its failure to grant release to men who were eligible for it. Several sporadic uprisings which occurred in the months that followed were quickly suppressed. The damage done in these institutions has been estimated at \$750,000.

Vandalia Prison Farm.—Again, on May 25, Illinois suffered from the rioting of convicts. This time about 500 inmates of the Vandalia Prison Farm engaged in a riot and set fire to five dormitories. In all probability the underlying cause here was an effort, through firing the buildings, to cover an attempt at a wholesale break. The institution is unwallled and houses short-time prisoners sentenced for minor offenses.

Rahway Reformatory Strike.—At Rahway Reformatory, New Jersey, Aug. 24, there occurred a strike of the entire population. There was no disorder of any kind. After break-

fast the men went back to their cells and refused to go to work. This strike was due to dissatisfaction with the food and with the wages for work performed. The inmates at Rahway do not receive the same wages that are paid the inmates of the State Prison at Trenton where men may earn as much as 25 cents a day. In the population at Rahway are about 500 men who have been transferred to the institution from Trenton. A small number of this group were responsible for organizing the strike. The most significant feature of this disturbance was the fact that no attempt at disorder of any kind was made. The most plausible explanation is found in the consideration that New Jersey has, through a system of classification, kept inmates of a vicious type housed at Trenton. By transferring only the better type to Rahway and the prison farms to relieve overcrowding, the danger of serious trouble has been avoided.

Wilmington Outbreak.—On Sept. 18 thirteen prisoners escaped from the New Castle County Workhouse and State Penitentiary of Delaware, located at Wilmington. This was accomplished by a well-timed plot in which one guard and one prisoner were wounded. Dynamite was used to blast a lock after four guards had been held up with revolvers and their keys taken from them.

Other disturbances occurred at Wetumpka, Ala.; Annandale Reformatory and Trenton Prison, N. J.; Florence, Arizona; Jefferson City, Mo.; Great Meadow Prison, N. Y. and Marquette, Mich. The attempted escape at Marquette was the most serious of the group, causing the death by shooting of the acting prison physician and the suicide of the four convicts who were attempting the break.

FEDERAL PENAL PROGRAM

Penitentiary at Lewisburg.—The Federal penal program continues to make progress. The new northeastern penitentiary at Lewisburg, Pa., is now under construction. The construction will conform with modern penological ideas and will facilitate

the proper classification and segregation of the inmates. The new penitentiary will have a small inside cell block for hardened or habitual criminals. For others there will be strong outside rooms and dormitories subdivided into small units. The more advanced men will be housed in honor rooms, made as nearly like living quarters of normal persons as possible.

New Hospitals and Jails.—The site for the hospital of 700 beds for defective delinquents has been selected at Springfield, Mo. This site was presented to the Government by the Chamber of Commerce of the city. The Southern Reformatory will be located at El Reno, Okla. New Federal jails are under construction at New Orleans, and at Billings, Montana.

The health program of Federal institutions, which is now under the jurisdiction of the Department of Public Health, shows definite progress and gives promise of becoming an example for state institutions to emulate. During the year the medical staff of the Federal institutions has been increased.

Education.—Progress is being made on the academic and vocational education work in the several institutions. The program laid out is extensive. It is still too early, however, to determine what results it may achieve. The library work is broad in scope and is the best found in the country. The officers' training school continues its operation in New York City and has more than proven its worth. The school has definitely established itself as an integral part of the Federal program.

PENAL CLASSIFICATION

Case Work.—Massachusetts is developing throughout the state institutions a program of classification together with an elaborate and well-regulated system of case work history. The most intensive case work is being done at the State Prison at Charlestown and the new penal farm at Norfolk. The future development of this work should prove of inestimable value.

Progress in New Jersey.—New Jersey has continued intensive work with its classification system and while it has not yet nearly reached the point of perfection, available information tends to show its great value in proper and intelligent prison administration. Because of the adoption of classification of inmates as a basic part of the program this state has been able to plan its new institutions along modern lines. The new reformatory at Annandale and the new prison farm under construction at Bordentown are of the medium security type of construction.

New York System.—New York is also developing a system of classification in all the prisons and reformatories of the State. It differs from the New Jersey system especially with regard to central office control. In the latter state while the central office determines a policy, only a supervisory control is exercised. In New York the central office not only has a direct control but the deputy commissioner in charge assumes this direct control by personal supervision and by presiding over the meetings of the committee in each institution. While the New York system is yet too new to determine what the definite results will be, it appears to present certain difficulties of institutional responsibility not found in the New Jersey system. In connection with the classification of inmates in New York a medium security prison is now under construction at Wallkill. When completed it will house 504 inmates. This institution will be quite unique for it is so constructed that it will be impossible to increase its capacity, thereby keeping its population to a number that will permit the working out of an intensified individual program instead of the usual mass program found in major penal institutions. To take care of the so-called hard boiled or habitual criminal type, segregation units have either already been constructed within the walls of the prison limits or are now under construction or planned for the major prisons of the State.

NEW PRISON CONSTRUCTION

Throughout the country much emphasis has been laid, during the past year, on new construction. This has been accomplished either through the building of new institutions or else through additions to the present plants, the most important of which are located at the Stateville Prison, Southern Illinois Prison at Menard, and Pontiac Reformatory in Illinois; Auburn, New York; Michigan City and Pendleton, Indiana; and London Prison Farm and Mansfield Reformatory, Ohio. In spite of the generally accepted conclusion that housing two men in a cell is a most vicious practice, Illinois continues to build cells for two men in all the new cell houses. Maryland is building a new unwallled reformatory for men in the western part of the state. Slow prog-

ress is being made on the construction of the new Industrial Reformatory at Chillicothe, Ohio, although six years have elapsed since the work on these buildings began. It will be all of two years, if not longer, before the plant is completed. The new prison at Graterford, Pa., is progressing fairly rapidly as is the new prison at Attica, N. Y. These two institutions represent a more or less lavish type of construction which is entirely unnecessary. At the latter institution it was found necessary to drive piles into the soil in order to obtain a firm foundation upon which to construct the huge wall and massive buildings. The soil is mucky and contains quicksand and in some instances piles had to be driven to a depth of 100 feet or more.

PREVENTIVE WORK IN DELINQUENCY

BY DOUGLAS P. FALCONER

EXECUTIVE SECRETARY, CHILDREN'S AID SOCIETY, BUFFALO

GENERAL

Effect of the Depression.—The year 1931 found the United States in a great economic depression, which grew steadily worse as the year advanced. Large numbers of families, hitherto self supporting, many of them on a high standard of living, found themselves without income, with reserves gone, and facing hunger and destitution. Public Welfare Departments and private relief agencies were unable to handle the increased volume of applicants, and emergency measures were taken all over the country. In the industrial centers the relief problem assumed disaster proportions. This situation affected the delinquency problem in several ways. In the first place public attention was centered on emergency relief. Great campaigns for funds stressing the need of feeding the hungry, made it increasingly difficult for the recreation and character building agencies to secure their normal budgets, although their work was also

greatly increased by the unemployment. Many former supporters withdrew or reduced their contributions, and many felt that preventive work should be temporarily abandoned.

Factors Tending to Delinquency.

—While these agencies were thus hampered, the need for their services became greater. Increasingly it is recognized that delinquency is intimately related to the emotional life of the delinquent, and to his conflicts, stresses and strains in attempting to express his personality, secure satisfactions, and adjust himself to his environment. With millions of people unable to maintain themselves on their accustomed economic levels, and facing want, family tensions became greater. Many lost self confidence through loss of security; mutual distrust and suspicions within countless families increased, conflicts arose, enforced leisure time was spent in bitterness and discouragement; long established habits of industry were overthrown, and behavior was adversely

PREVENTIVE WORK IN DELINQUENCY

influenced. Thousands of children, leaving school for industry, could find no employment and their energies were undirected and frequently harmfully used. The total American scene, especially in the urban centers, was one in which delinquency would naturally increase, and preventive efforts were minimized and neglected. As we go into 1932, the outlook is even more depressing, and the chances are strongly in favor of a great increase in delinquency. In spite of this, however, there are several items of interest and encouragement to the student of this subject.

NEW YORK CITY BUREAU OF CRIME PREVENTION

Miss Henrietta Additon, holding the rank of 6th Deputy Police Commissioner, has vigorously and ably developed her Bureau. Fine work is being done, especially with wayward minors. The Bureau also concentrates much energy on community conditions, which appear to contribute to delinquency. Students and administrators from this country and abroad are following this novel bit of police work with great interest and approval. Apparently Miss Additon is making real progress in her efforts to use the police as a preventive, rather than a punitive community force. Further success in this line will encourage that increasing number of observers who believe that only through public departments can large scale social efforts be successfully carried out.

WICKERSHAM COMMISSION

This body is publishing many volumes of valuable material, based on its studies. For example, they have issued two volumes, 400 pages each, on the *Causes of Crime*. There is a smaller volume on *Police*, which has an interesting section on "Prevention." Dr. Van Waters has written a valuable report on *The Child Offender in the Federal System of Justice*. Space prevents discussion of these or others of the Commission's reports, but students of the subject should not fail to study this material. It has been ably gathered, analysed and edited.

THE WHITE HOUSE CONFERENCE

While this conference was held in 1930, its work has continued through 1931, and is not yet completed. The report of the Delinquency Committee is just being printed and it is the outstanding contribution of the year. Our thinking on the subject has been so vague and contradictory, that the clear and vigorous statement of this committee may prove to be a turning point for much of our effort. The White House Conference has been followed by a series of state follow-up conferences, for discussion of the conclusions reached, and for consideration of local action. In one of these, held in New Jersey in April, Miss Katharine Lenroot, Assistant Chief, Children's Bureau, U. S. Department of Labor, read a paper on "Goals for the Understanding and Treatment of Juvenile Delinquency, as set up by the Delinquency Committee of the White House Conference on Child Health and Protection." This is a clear and able statement, and emphasizes "that the public, and all who deal with delinquents, abandon the practice of finding fault and laying blame, which in the past has so largely invaded our philosophy." Miss Lenroot also calls attention to six major implications of the Committee's work.

(1) Continue to study the individual as an individual. (2) Place responsibility upon the adult and society. (3) Consider the needs of the various social institutions which touch the lives of children, and the way in which they (the family, industry, the school, the church) are meeting the stress and tension of the great social and economic changes through which we are going. (4) Help the child, through compromise or acceptance, to build himself into society with an adequate and wholesome recognition of the privileges and responsibilities which this involves. (In other words, he must not be the center of the stage, but must play a rôle consistent with the rôles of others.) (5) The entire social group must be brought into harmonious coöperation in dealing with the delinquent. (Responsi-

bility cannot be shifted to police or courts or institutions, with the general community washing its hands of the job). (6) The committee in its general report did not present specific recommendations, desiring to make its statement, not one of technique, but of a new point of view.

LOCAL STUDIES

The New York State Crime Commission. Sub Committee on Causes, under the direction of Harry M. Shulman, has published the results of its studies, which may be summarized in this quotation: "Both crime and child delinquency owe their causation to human urges which lie so deep in human nature, and in our social expression thereof, that a complete curb on crime would involve a curb on the habits, attitudes, and desires of every man, woman, and child in the nation."

Pennsylvania. — Pennsylvania's ten-year program for child welfare, an interesting experiment in a state wide coöperative effort, has determined its objectives, and the drive is on to translate the program into the realities of better lives for Pennsylvania's children.

Massachusetts Child Welfare Commission secured some of its desired legislative and administrative objectives, and further progress is hoped for this winter. Like Pennsylvania, Massachusetts wants to raise its Juvenile Court age limit, believing that these courts are more likely to do a preventive job with young people. The Department of Correction of Massachusetts, under Dr. A. Warren Sterns, is continuing its studies through its Division of Research for the Prevention of Crime, mostly through studies of institution population.

Florida.—The Children's Code Commission is working toward a revision of the child welfare laws, and the National Probation Association has submitted its report on Juvenile Courts and Probation in Florida, and recommended substantial changes in the law and administrative procedures.

Chicago.—The Big Brother and Big Sister Federations, financed by the Payne Foundation, are studying delinquent attitudes in a selected group of Chicago children. The Institute for Juvenile Research, Dr. Paul L. Schroeder, Director, is engaged in a research program which will last several years.

Connecticut has created a new Child Welfare Commission, to review the accomplishments of the last decade, to compare the state's progress with that of others, and to make recommendations to the Legislature.

Illinois.—The Illinois Commission on Child Welfare Legislation, appointed in 1929, has reported to the Legislature, recommending thirty bills, and has submitted considerable data. Among other items they favor raising the Juvenile Court age limit for boys, mandatory appointment of probation officers in each county, commitment of delinquents to the Department of Public Welfare rather than to correctional institutions, and empowering the Department to use foster homes or institutional care at its discretion.

New York City has opened a new Bureau of Child Guidance, with Dr. Leon W. Goldrich as Director. The Bureau will serve the public schools of the city.

Michigan.—The Children's Fund of Michigan has opened child guidance clinics, centering in Detroit, with branches in Flint and Grand Rapids.

The Boys' Club movement continues to grow, and has one of the most hopeful programs of a preventive nature. For example, in Worcester, Mass., of 5,000 boys in the Club, only 41 appeared in the Juvenile Court in 1930. This experience is being repeated in many cities.

Rochester.—Churches and schools in Rochester, N. Y., have developed plans for systematic coöperation, in an effort to prevent delinquency. One of the results has been an increased interest in the work of the police, Juvenile, City and County Courts.

The National Probation Association has been studying Juvenile Court Detention Homes. Dr. Harri-

son A. Dobbs has been in charge. While the report is not yet available, preliminary statements by the Association indicate that these institutions, designed to prevent delinquency, are, in many places, poorly run, poorly staffed, with inadequate programs, and are probably creating more delinquency than they prevent.

Buffalo.—The new children's court of Erie County, New York (Buffalo) which begins its work January 1, 1932 under Judge Cecil B. Wiener, a woman attorney and social worker of long experience, is planning to experiment with the use of foster family homes for detention. The court will have no Detention Home, and the Chil-

dren's Aid Society has agreed, for an experimental period, to attempt to place all children, whom the court wishes to detain, in foster families.

SUMMARY

To summarize, in many communities there are thoughtful people intelligently at work endeavoring to reduce delinquency. Our body of knowledge is growing, and happily our humility is also increasing. But we must recognize that in the record of 1931, as of other recent years, the gains are pitifully small, the losses alarmingly great, and the prospects for the immediate future are none too good.

SOCIALISM

BY NATHAN FINE

RAND SCHOOL OF SOCIAL SCIENCE

SOCIALISM AND COMMUNISM

Socialism, for the purposes of this article, refers to the activities of the Socialist Labor and the Socialist parties, and their sympathetic auxiliaries,—the coöperatives, friendly unions, schools, leagues, camps, publishing houses, fraternal bodies, etc. As used here Socialism does not, therefore, cover the Communist bodies, the Communist Party (affiliated with the Communist International), nor its rivals in the American Communist world, the Communist Party (Majority Group), the Communist League (Opposition), the Proletarian Party, and the Communist League of Struggle. As is well known, there is a bitter struggle between the Socialist and the Communist organizations. The Communists claim that they alone are fighting to bring about Socialism. This the Socialists in the Socialist and Socialist Labor parties deny. They declare that Communism is a caricature of Marxian Socialism.

SOCIALIST LABOR PARTY

Anniversary.—The parent Socialist body, founded in 1877, the Socialist Labor Party celebrated on May

2, 1931, the fortieth anniversary of its official organ, the *Weekly People*, established in 1891 as the successor to the *Workman's Advocate*. It reissued some of the articles contained in the richly illustrated anniversary number under the titles of "Party Ownership of the Press, Historical Documents Relating to the Establishment of the Principles Involved," and "Daniel De Leon, Pioneer Socialist Editor," the latter, a 48-page pamphlet by the national secretary of the party, Arnold Petersen.

Journals.—The party started a new Greek paper, called *The Bulletin*, and continued—besides the *Weekly People* in English—*A Munkas* in Hungarian, *Radnicka Borba* in South Slavonian, and *Rabotnicheska Prosveta* in Bulgarian. During the year it continued also to tour uninterruptedly its national organizer, John P. Quinn, who reported unusually successful meetings everywhere.

Forthcoming National Convention.—The 18th national convention will begin on April 30, 1932. Preparations are already being made to put the Party's candidates on the ballot in as many states as possible. The

XV. SOCIAL PROBLEMS AND CONDITIONS

secretary, Arnold Petersen, declares, however, that election laws have been amended so as to make it more difficult than ever and in some cases impossible for a minority party to obtain a place on the ballot through petitions. Two pioneers of the Party, both very active up to their death, Peter McDermott of Providence, and John D. Goerke of Cleveland, passed away in 1931.

SOCIALIST PARTY'S ELECTORAL GAINS

Pennsylvania.—In 1927 the Socialist Party elected J. Henry Stump as mayor of Reading, Pa., two councilmen, among them James H. Maurer, and other local officials. By 1929 the party captured the two remaining council seats and thus completely controlled the city administration. The elections last November wiped out the gains of 1927 and left the Socialist Party a minority in the council. It required a fusion of the Republicans and Democrats to defeat the Socialists, who increased their vote from 12,304 in 1927, to 14,395 in 1931. The fusion candidate for mayor received 17,321 votes. In the whole state of Pennsylvania, John W. Slayton's vote for member of the Supreme Court in 1931 was officially 59,846, as compared with 29,976 in 1930.

Wisconsin.—Racine elected a Socialist, William Swoboda, as mayor. Manitowoc and Iola re-elected the Socialists Martin Georgensen and R. I. Anderson. Milwaukee and Beaver Dam, with their Socialist mayors, give the state a total of five. The Socialist candidate for Congress, to fill the unexpired term of Henry Cooper, in a district which includes Racine County, ran up the surprising total of 7,282, which was eight times the vote received by the party for the same office in 1930. And that poll was made against an old Non-Partisan Leaguer and progressive, who secured 14,447 votes.

New York.—The Socialist Party also fared quite well in New York City. Norman Thomas did not run second in the race for the borough presidency of Manhattan, despite the testimony of the Republican candi-

date before the Seabury investigating committee, that he had solicited the aid of Tammany Hall's former leader, but he did increase his exceptional 1929 Manhattan vote from 38,991 to 48,438. The total Socialist vote for all its candidates for the Assembly in New York City, which was only 76,046, when Thomas' vote for mayor in 1929 was 174,931, rose to 103,307 in 1930, and reached 110,651 in the off-year of 1931, without much of a campaign.

Connecticut.—In Bridgeport Jasper McLevy, an outstanding Socialist veteran, rolled up an unprecedented vote of 15,084, against 17,889 for Mayor Buckingham. The Socialists secured one aldermanic seat and some other local offices.

PARTY POLICY

National Convention.—The next national convention of the Socialist Party will be held in Milwaukee, starting April 16, 1932. A platform will be adopted for the elections, and candidates nominated for national office. Party policies will be hammered out. Right, centrist and left tendencies, which have been making themselves felt within the last few years, will undoubtedly be aired.

New York Conference.—At a conference of Socialist Party members who were trade unionists in the city of New York, October 4, 1931, resolutions were adopted inclining the party of the metropolis more to the "Militant" position, in so far as greater activity inside the unions is concerned. The setting up of a special labor department in the local party office, with a secretary, is called for.

Vienna Congress.—The reports of the American delegates who attended the congress of the Labor and Socialist International in Vienna in July, 1931, revealed some differences. A minority of the American representatives expressed considerable dissatisfaction with what they termed the mildness of the resolutions adopted at the international gathering. They attacked particularly the statements on the German situation and on disarmament.

Debates.—Under the joint auspices of the Socialist Party of Greater New York and the Rand School of Social Science, outstanding members of the metropolis debated a series of questions agitating the party: (1) Is it the present task of the Socialist Party to promote a third party movement? Yes, B. Charney Vladeck; No, Morris Hillquit. (2) The present policy of the party is not best suited to promote an effective class conscious trade union movement in the United States. Affirmative, Leonard Bright; Negative, James Oneal. (3) Is the economic policy of Soviet Russia, especially as represented by the five-year plan, conducive to the realization of Socialism? Yes, Dr. Alexander Fichandler; No, Dr. Sergius Ingerman. (4) What should be the attitude of Socialists toward assuming a governmental responsibility without having a parliamentary majority? Participation, Bela Low; Opposition, Theodore Shapiro. (5) Is Democracy always essential to Socialism? Yes, Algernon Lee; No, Paul Blanshard. (6) Is Marxism the philosophy of Socialism? Yes, David P. Berenberg; No, Norman Thomas. The latter's work, *America's Way Out*, appeared during the year. The book reviews it received caused Mr. Thomas to reply to those he termed liberals and Marxists.

Socialists and C. P. L. A.—Most, if not all, of the members of the Socialist Party coöperating with A. J. Muste's Conference for Progressive Labor Action announced, toward the close of the year, their disagreement with the new policy expressed of seeking to establish another Socialist-Communist party, and their intention of withdrawing. *Labor Age*, the official organ of the Conference for Progressive Labor Action, had been running a series of editorials, articles and manifestos attacking the Socialist Party, and urging the "Militants" to leave it and help establish a new left-wing party. The editor of the *New Leader*, James Oneal, made a bitter attack on the C. P. L. A. and its chairman, A. J. Muste, in the Dec. 5,

1931 issue of the national weekly of the Socialist Party.

1932 Presidential Situation.—Members of the national executive committee, Morris Hillquit, James Oneal, Daniel Hoan, Alfred Baker Lewis, together with Norman Thomas and Algernon Lee and the national secretary, Clarence Senior, met unofficially with the executive committee of the League for Independent Political Action to consider the 1932 presidential situation. No official statement was issued, but it was understood that the Socialist Party executive members decided to hold their national convention apart from the League for Independent Political Action, and not to coöperate with the latter in any move to hold a get-together of minority groups.

GENERAL ACTIVITIES

Publications.—Besides the literature issued by the League for Industrial Democracy, magazines such as the *L. I. D. Monthly*, *The Unemployed*, and *Disarmament*, and pamphlets and books; that published by the Rand School of Social Science, *The Workers' World*, and *Socialist Fundamentals*, both by David P. Berenberg, and the *American Labor Year Book*, 1931, edited by Nathan Fine; as well as the educational output of other auxiliaries, in particular, the Workmen's Circle, the Socialist Party national office and locals were responsible for a considerable volume of new literature during the year. Outstanding was a series of twenty little blue books on the fundamentals of Socialism, by leading American and English writers, from the house of E. Haldeman-Julius of Girard, Kansas.

Local Organizations.—The national secretary, Clarence Senior, reported the organization of a number of new locals, especially in the western states of Washington, Oregon, Idaho and Montana. Decision on the proposition of moving the party headquarters from Chicago to Washington, which has been agitating the party for years, was left to the April, 1932, convention.

Relief Work.—The party continued to be very active in the economic

XV. SOCIAL PROBLEMS AND CONDITIONS

field. Through the various relief agencies set up by locals, and especially the Emergency Committee for Strikers' Relief, organized by Norman Thomas and the League for Industrial Democracy, money, food, and clothing were sent by members of the party from all over the country to striking miners and textile workers. Individual Socialists everywhere took a leading part in all phases of these strikes as well as in lesser known local labor disputes.

Demonstrations and Demands.—In leading centers the locals of the party held numerous demonstrations, on the subjects of disarmament, release of Mooney and Billings, May Day, unemployment, and on the anniversaries of the deaths of Eugene V. Debs, Meyer London and Victor L. Berger. Emergency unemployment conferences were set up, unemployment insurance bill petitions pushed, the demand that a special session of Congress be called was stressed, and a program for immediate relief of the unemployed by local, state and Federal action advanced.

Broadcasting.—The radio station, W E V D, was heavily endowed by the *Jewish Daily Forward*, and a more powerful and effective voice on the air of the Socialist, labor and radical movement is forecast for the future. The station had been having

financial difficulties before the *Forward* stepped in.

Rand School Anniversary.—The Rand School of Social Science, an autonomous auxiliary of the Socialist Party, celebrated its twenty-fifth anniversary at a dinner in April, with over 1,000 guests. Algernon Lee, president of the school, acted as toastmaster, and the speakers were John Dewey, Alexander Meiklejohn, Harold Laski, Morris Hillquit, and Bertha H. Mailly, who had been executive director of the school for many years and who is now the manager of Camp Tamiment, run for the benefit of the Rand School.

PERSONNEL

Among the new members to the party were Sherwood Eddy, formerly of the National Young Men's Christian Association, and Kirby Page, Reinhold Niebuhr and Devere Allen of the *World Tomorrow*. Those who died included Dr. Anna Ingberman and Mrs. Zametkin of New York City; Charlotte Bohlen of New Jersey; Ethel Brooke Sanford of California; Alexander Hayman of Massachusetts; Dr. John Morgan, Yonkers Negro leader; and Kusta Theodor Wittila and Frans Syrjala, two of the outstanding Finnish Socialists in this country.

ORGANIZED SOCIAL WORK

By WALTER WEST

EXECUTIVE SECRETARY, AMERICAN ASSOCIATION OF SOCIAL WORKERS

ECONOMIC RELIEF

Scope of Work.—The depression in general, and unemployment in particular, have claimed the spotlight in organized social work during 1931. In public and private agencies dealing with relief in its various forms, a vast expansion of operations has been necessary. Data collected by Dr. Ralph G. Hurlin of the Russell Sage Foundation shows an immense relief total for the winter of 1930-31. The peak for the winter was reached in

March, when 428 agencies in 81 large cities reported a total relief bill of \$10,845,000 for the month. Unquestionably, the bill for relief in 1931 when totalled will be found to be greater by a large margin than any that has ever been spent for the purpose in any year in the Nation's history. No data is available for the total relief bill of the country which includes the amounts in smaller cities and those expended by the officials in counties and townships.

Adaptations of Social Agencies.

—To meet the tremendous increases, many adaptations were required in the organized societies and public departments. Staff increases were necessary. When limits of increase were reached because of lack of funds or because experienced social workers were not available, it became necessary, generally, to adopt emergency methods, and in many communities to set up emergency organizations. Health, recreation, and community services of many kinds, performed by social agencies in normal times also experienced heavy demands. Special efforts have been required to secure continued support for these services, which in view of the unprecedented relief needs, were in danger at times and places of being overlooked.

FUNDS FOR SOCIAL WORK

Community Chests throughout the country raised a total of \$83,213,428.00 for support of social agencies in 377 communities this year. In 1930 they raised \$75,108,792.00 in 363 cities. This by no means represents the total bill for social work. Some of the largest cities including New York, Chicago, and Boston, do not have Community Chests. Furthermore, the amount of Chest campaigns does not include sums derived by the social agencies from endowments and payments for their services. Neither do Community Chest figures show the amounts spent by public departments. In the figures collected by the Russell Sage Foundation on relief expenditures, between 70 and 80 per cent of the money spent for relief was found to be derived from taxation sources.

Special Mobilization.—During 1931 special attention was required for raising immense sums for carrying on social work programs. The most comprehensive of these efforts was the Welfare and Relief Mobilization undertaken by the Association of Community Chests and Councils at the request of the President's Emergency Committee on Employment. This was a campaign for stimulation of local money-raising

efforts with general and nation-wide publicity features. Since the merging of the President's Emergency Committee with the President's Organization on Unemployment Relief under the direction of Walter Gifford, the Welfare and Relief Mobilization has been continued in cooperation with the Gifford organization. It is taking responsibility for stimulating the organization and fund-raising capacity of cities of 25,000 population and over. Similar stimulation in the smaller governmental units has been undertaken by the newly organized American Association of Public Welfare Officials.

Work Programs.—A special feature has been introduced into relief programs in many cities in the form of "made-work." Many emergency organizations brought into being because of the unemployment situation, spent their funds on wages to unemployed heads of families. Programs of work were created in parks, on streets, and on other public repairs and improvements, and non-profit organizations, likewise, were furnished with employees for extra work which might be done and paid for out of the funds raised for the purpose. In New York alone more than \$8,000,000 was raised by an emergency campaign and spent in the first five months of 1931 for "made-work," by which more than 24,000 heads of families were given employment. A campaign for \$12,000,000 was held in the fall for the winter of 1931-32. Similar campaigns for varying amounts were conducted in most of the large cities, but data are lacking on the total for the country-at-large.

Federal Aid.—The unusual demand for relief funds assumed such proportions during 1931 that many local governmental units are supposed to have exhausted available resources for raising relief funds for the coming winter. A program of Federal Aid to supplement the resources of such communities on the basis of grants-in-aid as applied to road building and other projects is being advanced as a possible method of meeting the situation.

SOCIAL AGENCIES AND UNEMPLOYMENT

Measures.—Confronted for the first time with the necessity for such immense emergency organizations, organized social work has naturally turned its attention to measures by which unemployment, though not prevented, could be more adequately and more humanely dealt with than by mass relief measures. Compulsory insurance, better statistics on employment, and all relief resources and other possible measures which would enable communities to avoid the bread lines and other hastily organized dole systems which were necessary during the past year, have commanded the attention of social workers and social agencies.

Social Service Limitations.—The American Association of Social Workers in a public statement conceived it the duty of social workers "to make clear to the community that philanthropy cannot replace payrolls; to bear witness to the detrimental results of destitution upon the health, education, family life, personal efficiency and employability of those suffering from unemployment"; and "to the demoralization resulting from inefficient and humiliating forms of relief; to make clear that as social agencies are now constituted they cannot administer a large volume of relief without destroying their regular function of fostering the mental and physical health, education, and social adjustment of families; and to make clear to the community that non-relief forms of social work such as health, and recreational services are especially needed in a period of unemployment."

Cooperation In Relief Work.—Organized social work took the lead in many communities in stimulating local emergency organizations to deal not only with relief but with the problem of unemployment in as many of its phases as were presented to the community. On a national scale, in addition to the program of the Association of Community Chests and Councils, programs were also developed at the request of the President's Organization on Unemployment Re-

lief, by other national agencies, such as the Family Welfare Association of America, The Child Welfare League of America, and the National Association of Travelers' Aid Societies. The latter organization made a study and "Report on a Community Plan for Service to Transients." The Family Welfare Association of America is making a study of "Effects of Unemployment in Families." It is also preparing a handbook on the organization and administration of public relief agencies, and compiling and editing a monthly summary of material descriptive of changes in the unemployment relief situation in terms of financial resources, organization, personnel policies, and social case work policies and practices. By the same organization another study has been completed on the "Care of Homeless Men and Boys."

DROUGHT RELIEF

Record drought conditions affecting parts of twenty-eight states in the southern and middle-western areas, created another relief problem of an emergency nature. The burden of relief and other social measures, already stretched by the unemployment problem, had to be extended to cover the suffering caused by the drouth. A special campaign by the American Red Cross raised \$10,000,000 for relief in the drouth area, and by special legislation the Federal Government provided loans for seed and feed and eventually for food supplies.

PUBLIC WELFARE WORK

Relief Derived From Taxation.—Additional evidence of the assumption by public governmental units of social work programs was furnished by the data on relief compiled by the Russell Sage Foundation. These data showed, as mentioned above, that about three-quarters of the relief in eighty-one cities in the United States was derived from taxation sources. These figures had a significant bearing on the doctrine enunciated by the President and others, that the traditional American method of dealing

with the relief problem was through private and individual initiative.

State and County Programs.—In a number of states new welfare programs have been adopted recently which extended the scope of social work activities under public auspices. Pursuant to the New York State Public Welfare Laws, the counties have organized their own programs under state supervision. Similar legislation was considered by the legislatures of New Jersey, and Ohio but failed under passage.

Old Age Pension Laws, after having been adopted by six states in 1930, were adopted in 1931 by Delaware, Idaho, West Virginia, New Hampshire, and New Jersey.

City Appropriations.—Accompanying this extension of welfare activities under state enactment, many cities, particularly under the pressure of need for relief funds, have increased the amount of money appropriated and administered by private agencies, and in others by public welfare departments.

Public Relief Methods.—Interest in this development centers among social workers in the development of standards of practice and personnel in public departments. During the years in which social work has become a regular and established practice, a great deal has been learned about humane, economical, and beneficial methods in connection with relief giving, and it is considered important to prevail on public departments, as they are established, to accept and develop the standards of practice used in private social work. The American Association of Social Workers, the Family Welfare Association of America, and the newly established American Association of Public Welfare Officials have devoted important parts of their programs to this problem.

PUBLICATIONS

In addition to the available literature in the field of organized social work, three recent publications should be mentioned. *The Social Work Year Book for 1929*, published by the Rus-

sell Sage Foundation under the editorship of Fred S. Hall and Mabel B. Ellis, is proving a valuable reference book for social workers and for anyone interested in social work. *The Encyclopaedia of the Social Sciences* under the editorship of E. R. A. Seligman and Alvin Johnson, of which the first five volumes have appeared, is another. *The Social Worker in Child Care and Protection* by Margaretta Williamson is the third volume to appear in a series of studies in which actual field and office operations of various kinds of social work are described in detail. The series is under the direction of the American Association of Social Workers.

CONFERENCES

International.—Plans are under way for the second International Conference of Social Work to be held at Frankfurt-am-Main, Germany, in July, 1932. The general subject of the conference will be the family. Committees are now active in the United States as well as in a number of foreign countries in gathering social work data applying to the family in relationship to health, industry, and other social problems, and the services which governmental and private social work organizations can render. Inquiries about the conference can be made to Howard Knight, 82 North High Street, Columbus, O., secretary of the United States Committee.

National.—The National Conference of Social Work was held in Minneapolis, June 14-20, 1931. Dr. Richard C. Cabot of Boston was President. C. M. Bookman of Cincinnati was elected President for 1932 when the Conference will be held in Philadelphia.

Other conferences, in addition to those held by the agencies in each state, were groups of executives of social agencies which met under the auspices of the Association of Community Chests and Councils. The Great Lakes Conference was held at Geneva, Wis., the last week in June, and the Blue Ridge Conference at Blue Ridge, Va., the last of July.

HOUSING PROGRESS

BY GEORGE GOVE

SECRETARY, NEW YORK STATE BOARD OF HOUSING

LEGISLATION

Congestion Relief in Massachusetts.—During the past year efforts have been made by civic and social welfare leaders in various parts of the country to effect more rational treatment of the housing problem and to increase public control over housing and real estate developments. The Massachusetts Civic League introduced a constitutional amendment to the Massachusetts Legislature to authorize municipalities to acquire land by eminent domain to improve layout, construct new streets, parks and playgrounds and to sub-divide the land and sell it to limited dividend corporations for housing developments. The express purpose of this amendment was to relieve congestion of population and to remedy housing conditions that were detrimental to health, safety and morals and to adapt the land so acquired to the social and business needs of the community. It is significant that the League in urging the adoption of this measure pointed out that its purpose was not to put the cities and towns of the State into the housing business but to overcome the ineffectiveness of modern methods of piece-meal acquisition of land based on voluntary sale and purchase and to provide the means of encouraging large-scale housing developments in accord with modern trends.

Illinois.—A commission created by the Illinois Legislature has undertaken elaborate studies as a basis for recommendations to the Illinois Legislature in 1933. It is the purpose of the commission to incorporate in a legislative enactment definite proposals for a public policy with respect to housing and to create an instrumentality of the state for purposes of administration.

Pennsylvania.—An effort to obtain the adoption by the Pennsyl-

vania Legislature of an act similar to the New York State Housing Law was carried through the Legislature but was vetoed by Governor Pinchot in the closing days of the session.

New York.—In New York State several important amendments to the State Housing Law were enacted. Of these the most important authorizes municipalities to sell or lease any City-owned lands no longer required for use by the City in its corporate capacity, to a public or private limited dividend company organized under the State Housing Law without appraisal, public notice, advertisements or public bidding, for such price or rental as may be agreed upon by the municipality and the limited dividend housing company with the approval of the Board. The lands may be leased for terms not exceeding 50 years with right of renewal for not more than 30 years. Limited dividend corporations intending to erect dwellings under the State Housing Law are given the right to mortgage the fee of such property and to give as security for its notes or bonds a first lien upon the land and improvements. The lease may provide for the gradual retirement of the stock of the corporation out of rentals until all are retired except a minimum of not less than ten shares which must remain until the termination of the lease when the property will revert to the City. Under the provisions of this act it will be possible for municipalities in New York State to utilize lands abutting public improvements acquired under excess condemnation for housing purposes under the terms of the State Housing Law.

With the completion of three large projects begun early in the year under the terms of this law, the program of the State Board of Housing was temporarily halted in May by litigation challenging the constitu-

tionality of the act. In both cases the constitutionality of the law was upheld by the Supreme Court, and construction has again been undertaken with the approval of the plans of the Eastern Boulevard Homes, Inc., a newly formed limited dividend corporation, which will construct a large project in the Bronx at an estimated cost of \$2,000,000. The total investment in housing under this law in New York City now exceeds \$10,000,000, and provides housing accommodations for 1925 families.

MODEL TENEMENTS

Chicago.—The stability of existing large-scale low-cost housing enterprises, in marked contrast to many commercial enterprises unwisely planned, is indicated by the reports of the Michigan Boulevard Garden Apartments in Chicago and of the Brooklyn Garden Apartments and other projects operating under the New York State Housing Law. The building corporation of the Chicago development financed by the late Julius Rosenwald for negro tenants reported a net profit for the year of 5 per cent on common stock outstanding on Dec. 31, 1930, after full allowance had been made for operating expenses, interest, taxes, insurance and depreciation.

The Brooklyn Garden Apartments, which last year paid a dividend of 5 per cent, has this year increased the rate to 6 per cent, the maximum permitted by its charter. In reporting to the stockholders, Louis H. Pink, president of the corporation, reported: "Our houses are full. We earned the full dividend out of rents lower than the law requires. The success of our company demonstrates that the building of model tenements under the State Housing Law can be a safe, conservative business, as well as a community benefit."

HOME BUILDING PROJECTS

Pittsburgh.—The Buhl Foundation, Pittsburgh, created in 1927, has inaugurated a \$2,000,000 home building project to demonstrate the feasi-

bility of providing modern and desirable homes at rentals within the reach of families of moderate means. In the planning of this project new principles have been applied for the purpose of obtaining all the advantages that accrue from comprehensive large-scale operation. Less than 30 per cent of the entire tract will be occupied by homes. The remainder will be landscaped to provide large central parks, wide lawns and gardens and playgrounds for young children. Three hundred families are to be accommodated in single and two-family dwellings on a 45-acre tract in the Mt. Washington section. Construction has begun and approximately one-fourth of the project will be completed by May 1, 1932. The average cost per home, including site and development, will be about \$7,000. The trustees have expressed the hope that their experiment will serve as a precedent for other foundations in the investment of capital funds to serve a social purpose as well as provide income for other benefactions of the Foundation.

Newark.—Incidental to the development of one of three sites acquired by the Prudential Insurance Company for large scale housing projects in widely separated sections of Newark, the New Jersey Supreme Court on June 18 handed down a decision affecting an important problem of public policy with respect to both housing and recreation. Acting in cooperation with the City, the Prudential Insurance Company, under authorization of the Legislature, acquired these blocks for the erection of housing projects for wage-earners. Finding that the land cost of two blocks was so high that it would be impossible without direct subsidy from the city to erect apartment houses to rent at prices wage-earners could pay, it was proposed that the City purchase an interior strip 140 feet wide running the entire length of the two blocks for park purposes. The remaining strip of 30 feet on each side of the park was to be occupied by 5-story fireproof apartment buildings about 26 feet in depth with

XV. SOCIAL PROBLEMS AND CONDITIONS

a 4-foot walk on the park side. Although this proposal received the approval of the City Commission it was promptly attacked in a taxpayer's suit as being an unjustifiable use of public funds in aid of a private housing enterprise. Should the decision be affirmed it will doubtless establish a precedent for other cities of the state in which efforts toward the reconstruction of building areas have been thwarted by high land prices.

PROPOSALS FOR PUBLIC ACTION

With the continuation of depression recurrent appeals for direct public action in housing has been made by individuals and by organizations. These include plans to relieve the mortgage market, demands for direct Federal appropriation for housing purposes, "five-year plans" and the setting up of "building materials and housing syndicates" by the Federal Government or other governmental agencies empowered to reconstruct the congested urban areas.

Most of these proposals relate to emergency schemes for advancing public works as a partial solution of the problem of unemployment.

NATIONAL CONFERENCE ON HOUSING

The year closed with the National Conference on Housing which met in Washington on Dec. 2 by invitation of President Hoover. For more than a year 25 committees and six correlating groups had been at work on the various reports which were presented. It is unfortunate that the work of the various committees was not sufficiently correlated prior to the meeting in Washington. As a result the Conference was distinguished by marked disagreement among the several committees, both with respect to the objectives sought and the principles to be applied. At the opening session the President announced that he would recommend to Congress the establishment of a mortgage discount bank. This proposal the Conference endorsed.

SOCIAL HYGIENE

By JEAN B. PINNEY

ASSOCIATE DIRECTOR, AMERICAN SOCIAL HYGIENE ASSOCIATION

EFFECTS OF ECONOMIC DEPRESSION

In common with all public health and welfare movements, social hygiene has felt the effects of economic depression and unemployment during the year 1931. Any "social dislocation" like this aggravates the conditions which social hygiene seeks to alleviate, in these respects particularly:

1. The stability of ordinarily normal persons is threatened: The unrest and uncertainty which naturally develop in a civilization upset by a deviation from the customary make more difficult and at the same time more necessary than ever the character-building and character-education phases of social hygiene. Especially is this true with regard to young peo-

ple whose view of life is now being formed.

2. Family relations are jeopardized: To gain employment many men who are heads of households must leave home, and women must often leave their families, resulting in danger of broken homes and neglect of children.

3. Disease and vice thrive: The massing of large numbers of persons in employment camps and other concentration areas, often without adequate supervision, creates a "boom town" situation which fosters infection from disease and increases the possibility of commercialized prostitution.

4. The problem of treatment for venereal patients becomes acute: Many infected persons who went regularly to their physicians or to "pay"

clinics for treatment in normal times can no longer afford to do this. The many free clinics are so crowded that patients turn away discouraged. Without medical supervision, these men and women constitute a grave health menace.

5. Prostitution becomes a more serious menace: Unemployment is a factor in reducing the resistance of many young women to seduction, and causing them more easily to become victims of the "madames" and pimps who make a living by exploiting women. Others resort to prostitution of their own initiative, especially in cities where the police authorities tolerate open display of this "business."

6. The danger of delinquency is greater: Work is a safeguard of the easily influenced boy or girl. Protective and recreational agencies must re-double their efforts to provide wholesome environment for jobless young people.

Social hygiene agencies in the states and communities have been called upon to their full capacities to meet these problems, and the American Social Hygiene Association as the national agency has been besieged with requests for assistance. The emergency is comparable to that of the World War. Paradoxically, these facts and factors, while making progress more difficult, have made it easier, as public interest has been quickened by the great necessity. A summary of the year's activities indicates that real gains have been made along all lines of social hygiene work.

PUBLIC INFORMATION

State and Community Groups.—Increased recognition is shown by the organization of a constantly growing number of state and community groups. During 1931 societies and committees have been organized in Iowa, Los Angeles, San Francisco, San Diego, Oakland, Lowell, Missouri, Toledo, Seattle, Utica and Syracuse. The number of social hygiene societies operating as separate entities in the United States is now fifty-two.

National Organizations.—In addition to the community and statewide programs thus maintained na-

tional organizations such as the General Federation of Women's Clubs, the National Congress of Parents and Teachers, the National Council of Women, the National League of Women Voters and other agencies, whose memberships aggregate several millions of persons, are constantly stressing the subject through standing social hygiene committees of their state and local groups.

Conference Programs.—Convention and conference programs of these and other agencies have given unusual prominence to social hygiene during 1931. The National Conference of Social Work, the American Public Health Association, the American Home Economics Association and other national agencies, and many state and community conferences, health and welfare and social workers, have held special programs. In addition, important regional conferences on social hygiene have been held in Pennsylvania, New York, Quebec, Minnesota and Louisiana.

Journals.—*Venereal Disease Information*, the monthly bulletin of the United States Public Health Service; the *Journal of Social Hygiene*, *Social Hygiene News*, and national and state organization magazines of other agencies have assisted. Much new interest in the past year has been developed among libraries, chiefly through the American Library Association.

EDUCATIONAL WORK

College Courses.—In addition to the popular education provided through public information, excellent progress is being made in formal education. Such institutions as Columbia University, University of Cincinnati, State College of Washington, and the Negro colleges of Tuskegee, Hampton Institute, State Normal College of Alabama, and Bluefield Institute regularly include credit courses for the training of teachers in one or more sessions. A large proportion of colleges and universities provide for social hygiene education either in special series of lectures or as parts of established departmental courses. The National Conference on College Hygiene held in Syracuse, New York, in

XV. SOCIAL PROBLEMS AND CONDITIONS

May adopted comprehensive plans for increasing and improving social hygiene education in the colleges.

Secondary School Experiments.

—Progress is also evidenced in the secondary schools. Experiments, and in some cases proved programs are under way in Washington, D. C.; Bronxville, New York; Salt Lake City, Utah; El Paso, Tex.; Cleveland, O., and other places. Here again the Negro schools are eager to grasp the opportunity. Experiments in social hygiene education in fifteen selected colored high schools in Alabama, and the publication of a report of their success has led to plans for similar programs in other states.

Work of Church Groups.—Outstanding progress has been made in the last year among religious groups. The Federal Council of Churches, after years of social hygiene promotion, is adding a worker to its staff for this purpose. The Episcopalian, the Presbyterian and the Baptist denominations have included the subject in their national programs. Numerous local church federations and ministerial groups have held conferences and discussions during the past year. A special social hygiene reading list for ministers was prepared by the Unitarian Association. The Committee on Parent-Training in Churches of the National Congress of Parents and Teachers has developed a program from that angle.

State Parent-Teacher Associations have been consistently active during the past year in arranging programs of lectures, discussion groups, and institutes for the practical instruction of their membership.

LEGAL AND PROTECTIVE MEASURES

Legislation.—Because of fairly satisfactory existing laws legislative needs in social hygiene are at present largely limited to removal of obsolete and unsound laws or to revision of incomplete and impracticable provisions. During 1931 the legislatures of 44 states have been in session. Florida, Maryland, Oregon, Pennsylvania and Tennessee attempted and failed to pass measures which require an ex-

amination for venereal diseases before marrying. Ten states introduced bills for compulsory sterilization of diseased or unfit persons, and five, Indiana, Maine, Oklahoma, Tennessee and Vermont passed them, making 28 states which now have sterilization laws. In New York State measures for venereal disease control in rural areas were passed in the health program recommended by the Governor's Special Health Commission but the lack of provision for county health units will greatly limit their effectiveness. In New York a number of bills were also introduced to improve the present laws against prostitution but no laws were enacted. In Missouri an unsuccessful attempt was made to improve the Injunction and Abatement Law. Thirty states considered legislation relating to juvenile courts or probation services, Colorado, Indiana, Maine, Maryland, Massachusetts, Minnesota, Missouri, Ohio, and Wisconsin passing laws. Legislative trends in 1931 may be summed up as centering about the protection and welfare of the child and attempts to change the status of marriage and the family.

Environmental Conditions.—Efforts to improve environmental conditions through the repression of commercialized prostitution have gone forward during the year. Forty-four investigations of vice conditions in three states, Missouri, New York and Rhode Island, resulted in vigorous activity for law enforcement.

International Aspects of Prostitution.—The United States has been concerned in international aspects of prostitution through the appointment of Bascom Johnson as Chairman of the League of Nations Travelling Commission on the Study of Traffic Among Women and Children in the Far East. The Commission's report, which is expected to be ready in the summer of 1932, will supplement that made by the League's Special Body of Experts in 1927 when 28 countries in Europe and South America were studied.

Crime Prevention.—Of special interest in protective measures during the past year has been the establish-

ment of a Crime Prevention Bureau in the New York City Police Department with Henrietta Additon, a social hygiene worker of long experience, as Deputy Police Commissioner in charge.

MEDICAL MEASURES

Boards of Health.—As previously stated, the problem of control of syphilis and gonorrhea has become acute on account of the inability of indigent persons to secure proper treatment. In addition the danger of infection is heightened by the crowded conditions prevailing among the very poor and unemployed. State and local Boards of Health have shown a fine courage in the face of these facts. While carrying a burden taxing their full strength they have still initiated new work, particularly in the prevention of congenital syphilis.

Syphilis Instruction.—Social hygiene societies and other health agencies, magazines and the press, have assisted in giving this subject the recognition and understanding it so greatly needs among the medical and nursing profession, social workers and the general public. A series of institutes for the instruction of general practitioners in the South regarding this aspect of syphilis has been sponsored by the United States Children's Bureau, Emory University and the American Social Hygiene Association with excellent results. An exhibit prepared by the latter organization for the American Medical Association in 1930 has been shown this year at several meetings of state medical societies and the annual meeting of the National Medical Association (colored).

Exhibits.—Several new medical exhibits have been prepared during the year. One prepared by the American Social Hygiene Association and the American Heart Association on cardio-vascular syphilis received a special Certificate of Merit at the American Medical Association meeting in Philadelphia in June. Another exhibit on Venereal Disease in Industry was shown at the American Medical Association meeting and also at

the annual National Safety Congress in Chicago. Both of these conventions have a large attendance of the professional and industrial leadership of the country.

Illegal Practices.—Protection of the public from exploitation by unscrupulous and illegal practitioners has engaged cooperation of official and voluntary social hygiene agencies. Studies of quackery and "drug-store treatment" have been made in New Orleans, Chicago and the Negro District of New York. These studies have secured data on existing practices which have been made available to local agencies such as retail druggists associations and medical societies as evidence of violation of the laws. The National Better Business Bureau and other agencies have co-operated in tracking down and suppressing fraudulent and dangerous newspaper and magazine advertisements.

Surveys.—Continuing the series of surveys of the prevalence of venereal disease, begun some years ago by the United States Public Health Service in coöperation with local and national voluntary agencies, studies have been made in the cities of New Orleans and San Francisco, and reports published by the Service.

Seamen's Health.—A plan for prevention and treatment of syphilis and gonorrhea among seamen has been developed through the provision of a course of instruction in medical and surgical emergency methods, including the handling of venereal disease cases, for ships officers, to be given at a New York hospital. A joint committee has been set up to concern itself with the health and welfare of seamen while in the Port of New York.

Nursing Service.—The nursing profession continues to increase its interest. A special field service for nurses sponsored by the National Organization for Public Health Nursing has provided institutes in approximately ten states during 1931. A joint committee under the auspices of the National League of Nursing Education is promoting social hygiene training for student nurses.

XV. SOCIAL PROBLEMS AND CONDITIONS

Miscellaneous Measures.—The Porto Rico Child Health Committee has taken official recognition of syphilis as one of the major health problems of the island, and in setting up district health units, is attempting to include control measures. A further important development during the year has been among industrial firms regarding the risks and losses suffered to industry from syphilis and gonorrhea. A new pamphlet on this subject, including a program for prevention and control, has been given wide distribution.

FAMILY RELATIONS

Organized Service.—The year has shown practical advances in facilities for encouraging and promoting wise marriage, training for parenthood, successful family life and marital adjustments. The Institute of Family Relations, established in Los Angeles, early in 1930, has reported on its first thousand cases stating that the three most frequent factors underlying marital incompatibility were: (1) sexual maladjustment; (2) financial difficulties; (3) disagreement as to the use of leisure time. This agency continues to enlarge its activities and influence, and other communities profiting by its experience are preparing to venture into the same field. The Cincinnati Social Hygiene Society has recently publicly announced its intention of setting up a family consulta-

tion service. The Kansas City Social Hygiene Society and the Social Hygiene Society of the District of Columbia have established committees on Human Relations to consider similar projects, and in New York an Institute of Family Relations has been incorporated and has announced its intention of starting a clinic.

Through its newly established Division of Family Relations, the American Social Hygiene Association is watching these experiments with interest. This organization, serving as a clearing house of information for all agencies and persons interested has made a study of courses of instruction provided by educational institutions, theological seminaries and other agencies designed to inform and prepare students for marriage and parenthood. Several conferences on Marriage and the Home, similar to the unusually successful meeting held in Buffalo in 1930 under that name, have been held under the auspices of the Federal Council of Churches in various parts of the country. Many church groups are making consultation services available for those of its parishioners married or considering marriage. Since the main objective of social hygiene is the preservation and improvement of the family as an essential factor in organized society this phase of social hygiene is bound to grow steadily in significance and effectiveness.

MENTAL HYGIENE

By PAUL O. KOMORA

ASSOCIATE SECRETARY, THE NATIONAL COMMITTEE FOR MENTAL HYGIENE

GENERAL PROGRESS

The year 1931 saw no startling developments in the attack on the problem of mental disease. The chronicles of mental medicine record rather a variety of events, none of which stands out as a decisive factor in the advance on this sector, but taken together represent substantial progress. Notable work has been done in a number of directions, and

there is a feeling that what has been accomplished is important both for its own sake and for what it promises in the future. The results secured from a number of experiments in drug treatment and other forms of therapy in certain types of mental diseases during the past year may or may not have special significance, but they indicate new possibilities for research and study, and inspire

the hope that much may be learned concerning the nature and causes of mental diseases from the so-called "organic" as distinguished from the "psychogenic" approach to their study. The knowledge that has been gained has come, on the whole, from slow, steady progress over a period of years, and it is likely that future progress also will come from the accumulated results of patient, hard work by many investigators studying various phases of what is a many-sided, complex problem, rather than from any single spectacular discovery.

HOSPITALIZATION

Institutional Population and Treatment.—The hospitalization of the mentally sick is still a major problem and the institutional population continues to grow. There are approximately 300,000 patients in mental hospitals in the United States at the present time, with about 75,000 new admissions each year, and an average annual increase of about 15,000 in the total number of patients under treatment. These figures do not indicate so much an actual increase in the frequency of mental diseases as they do the fact that more people with mental troubles are seeking medical advice and treatment than ever before, thanks, in part, to the influence of educational work in mental hygiene. This is, in the long run, a hopeful sign, as is also the fact that recovery and improvement rates among mental patients are holding their own, and that out-patient mental clinics are handling an increasing volume of cases that do not require hospitalization. Some 36,000 adults attended these clinics during the past year. More should be done, however, to relieve the overcrowding prevalent in state mental hospitals in all parts of the country.

Hospital Facilities.—Other bright spots in the picture were the opening last summer of the State Psychopathic Hospital in Galveston, Tex., the first of its kind in the south, and the authorization by the State Legislature of a similar hospital in Pitts-

burgh, Penn. These institutions, both of which will have university connections, mean much to the mental health programs in their respective states as they are designed not only to care for mental patients but to stimulate research and training in this field. It is encouraging to note also the progress that has been made in the movement for the care and treatment of mental patients in general hospitals. A recent survey shows that more than a hundred such hospitals in some twenty-four states have psychiatric facilities, at least fifty of them having special mental wards. Ten years ago general hospitals caring for such patients were comparatively rare.

Community Clinics.—Although financial difficulties have presented themselves, the depression, fortunately, has not seriously threatened community clinic programs, and child guidance activities continue to flourish. Indeed, a survey completed in 1931 reveals a steady growth in extramural mental hygiene work throughout the country, the findings showing some 674 clinics providing a regular mental health service to the public in 34 states. More than 50,000 children with all sorts of behavior disorders and mental problems were examined and treated in these clinics during the past year. The states having the largest number of clinics are New York, Pennsylvania, Massachusetts, New Jersey, Michigan, Colorado, and Ohio. Most of the clinics are in cities of 150,000 population or over, the smaller communities and the rural centers, generally, lacking the financial and social resources and the personnel necessary for the establishment of adequate child guidance services. Studies with a view to determining methods to meet this need are now in progress in several states.

MEDICAL INTEREST IN PSYCHIATRIC PROBLEMS

Recognition of Mental Medicine.—Another hopeful sign is the awakening of general medical interest in the mental disease problem. A third of the program of the 27th Annual Congress on Medical Educa-

tion, Medical Licensure and Hospitals of the American Medical Association held in Chicago last February was devoted to psychiatry and mental hygiene. Especially significant was the symposium on psychiatric education which revealed a decided change for the better in the hitherto apathetic attitude of the medical profession toward this specialty. No longer is psychiatry the "cinderella of medicine" but a respected member of the family of the medical arts and sciences. Speaking of the importance of mental hygiene for life prolongation, at the last Clinical Congress of Surgeons, Dr. Charles H. Mayo declared that medicine must now turn its attention to the study of mental diseases to the end that "man's mind may last as long as his body." This recognition of mental medicine is exceedingly important as progress in the control and prevention of mental diseases will depend more and more upon the interest and sympathy and understanding that the general practitioner brings to this problem as he comes into contact with it in the average family.

Educational Program.—An important development in this connection has been the launching of a program of psychiatric education by The National Committee for Mental Hygiene, with the financial aid of The Commonwealth Fund, The New York Foundation, and The American Foundation for Mental Hygiene. The shortage of competent psychiatrists has long been a matter of deep concern to mental hygiene leaders because of its retarding effect on psychiatric progress and the realization that the development of mental hygiene work along sound lines depends basically upon the number and calibre of trained men and women available for this work. Neither care nor treatment, nor research, nor education, nor any phase of psychiatric or mental hygiene activity, institutional or otherwise, can be safely developed without a trained personnel. Of the approximately 160,000 physicians in the United States today, somewhat over 40,000 are specialists in the various branches of medicine,

and of these but 1,600 are psychiatrists, or 1 in 25. In other words, there are a hundred times as many doctors in physical as in mental medicine. It is hoped that through this effort it will not only be possible to attract medical students to psychiatry, but that by the extension and improvement of psychiatric teaching and its integration into all branches of medical education, both graduate and post graduate, a working knowledge of the subject may be imparted to the medical profession in general.

LEGISLATION

A major achievement was the passage during the closing days of the Seventy-First Congress of Senate Bill 1812, under which the Federal Census Bureau was authorized to "annually collect and publish statistics relating to crime and to the defective, dependent and delinquent classes." The enactment of this legislation establishes as a permanent activity of the Government a work begun in 1917 by The National Committee for Mental Hygiene and developed in collaboration with the American Psychiatric Association and the American Association for the Study of the Feeble-minded, and ensures the annual enumeration of the insane, feeble-minded and epileptics in institutions throughout the country. In addition, it extends the statistical work of the Census Bureau into the field of prisons and other penal and correctional institutions. Under this law the Bureau will be in a position to secure vital data that, taken over a period of years, will indicate institutional population trends, make possible accurate estimates for future institutional needs, and form the basis for programs of prevention calculated eventually to reduce the number of those requiring institutional care.

MENTAL HYGIENE EDUCATION

The chronology for 1931 records a number of developments reflecting a growing recognition of the importance of mental hygiene for the field of education. Foremost among them

CHILD WELFARE

is the striking increase noted in mental hygiene activity in teacher-training institutions throughout the United States. Of 239 state and city normal schools and other teacher-training institutions, questioned on the subject, 80.7 per cent reported instruction in some phase of mental hygiene in their curricula, 18.8 per cent having a psychiatrist or a mental hygiene clinic available for their students. Marked activity in the promotion of mental health in the field of higher education is also evident from the fact that fourteen colleges and universities now include psychiatric or mental hygiene provisions in their student health services. The institutions having such a service, on either a full- or part-time basis, at the present time, are University of Chicago, University of Minnesota, Vassar College, Yale University, Antioch College, Brown University, Dartmouth College, Harvard University, Radcliffe College, Smith College, Columbia University, University of Michigan,

Washburn College, and Wellesley College.

Professor John Dewey said recently that "there is no greater challenge to education today than the fact that persons suffering from mental disorders require as many beds in institutions as those suffering from all other diseases combined." The appointment of a psychiatrist to the Department of Education of the State of New York, the increasing number of public school systems setting up child guidance bureaus or other forms of mental health services, the formation of sections on mental hygiene in each of the 48 state parent-teacher associations, and other developments in the same direction during the past year would seem to indicate a growing determination to meet this challenge, and to answer in the affirmative Professor Dewey's question: "Is it not the province of education to develop more positive immunity against these mental and moral failures?"

CHILD WELFARE

By C. C. CARSTENS

EXECUTIVE DIRECTOR, CHILD WELFARE LEAGUE OF AMERICA, INC.

NEW LEGISLATION

Thirty-two of the sixty Bills recommended by the Children's Code Commission of Massachusetts were passed. Important steps were taken for the care and supervision outside of school hours of mentally defective and retarded children in special classes, and the social supervision of all children under twenty-one years of age who have attended such classes, privacy of hearings in juvenile court sessions, mental and physical examinations of children before commitment as delinquents, regulation of newspaper advertisements of children offered or wanted for adoption, insurance of privacy for female witnesses involved in illegitimacy proceedings and in crimes involving sex.

A Children's Bureau was established in Texas under the State Board of

Control, and a Child Welfare Commission was appointed in Connecticut, to review the accomplishments of the past ten years, when an earlier Commission's report brought about important changes, and to make recommendations as to new legislation. A Crippled Children's Commission was created by the Kansas Legislature, with power to select and approve hospitals, convalescent homes and boarding homes for crippled children and to organize and conduct diagnostic clinics. Colorado was the sixth state to ratify the child labor amendment to the Federal Constitution. North Carolina appropriated for each of the next two years \$5,000 for boarding home care of dependent children not eligible for admission to orphanages and unsuitable for adoption, and \$50,000 for mothers' aid,

XV. SOCIAL PROBLEMS AND CONDITIONS

both of these amounts to be matched by the counties using it.

THE PHYSICALLY AND MENTALLY HANDICAPPED

Though results of legislation were meagre the results of cooperative action have been extensive. The W. K. Kellogg Child Welfare Foundation, with a capital of \$1,000,000, has been created to provide scientific treatment for children whose mental or physical defects can be remedied, and special training which will minimize their handicaps for those whose defects are incurable. The State Commission of Illinois on Physically Handicapped Children reports that infantile paralysis is responsible for nearly a quarter of the 10,000 physically handicapped children found, and probably a similar proportion of the 6,000 others who have not yet been found, and that tuberculosis of the spine ranks next in importance as a single cause. New York City maintains 150 special classes for approximately 3600 physically handicapped children now in its hospitals, day camps, convalescent homes and other institutions. These classes are organized as annexes to schools for normal children. Under a new approved plan nine separate schools will be organized for crippled children of various types, each in charge of an expert. A new Shriner's Hospital for Crippled Children has been opened in Honolulu, and a new Orthopedic Hospital, equipped with solarium, open sun-porch, play-room, and rooms for occupational therapy, in Madison, Wis.

EDUCATION

The last of twenty free elementary schools conducted by the Children's Aid Society of New York City, and first established in 1853, before public education had reached the poorer sections of the city, has been closed and the buildings have been converted into centers for club activities, clinics, and school lunches. A Bureau of Child Guidance was opened by the New York City Department of Education, to serve as a behavior clinic for pupils of the city schools, with a staff of psychiatrists, psychologists

and social case workers. In three cities of Ohio where children are required to attend school up to the age of sixteen, and those between the ages of sixteen and eighteen may leave school only if they have completed the seventh grade and are employed, or are high school graduates, 98 per cent of the children 14 years old, 96 per cent of those 15, 76 per cent of those 16, and 59 per cent of those 17 were enrolled in school. Of the children not enrolled 73 per cent left school to go to work but one-fourth of them were not employed. Thirty-five per cent of white children and 50 per cent of colored in six rural counties of North Carolina were absent twenty days or more during the school year. The principal reason alleged for the absence of the white children was illness; for the colored, agricultural work. In the 93 cities of the United States having a population of 100,000 or more, school attendance among all age groups has increased. For children from seven to thirteen years inclusive, 31 cities reported 98 per cent in school in 1930 as compared with only one city in 1920. In 83 cities the percentage was 96 or over as compared with 26 cities in 1920. For boys and girls of fourteen and fifteen the percentage for the country as a whole was 88.8, the highest, 98.8, being Long Beach, California.

DELINQUENCY

The National Committee on Law Observance and Enforcement, jointly with the White House Conference on Child Health and Protection, urged that the child violator of Federal law be recognized as a juvenile delinquent, in conformity with a similar status in the various states. They rejected a plan to set up a system of juvenile courts, on the ground of impracticability, but approved of the states assuming responsibility for court hearings and subsequent treatment. The Crime Prevention Bureau, established in the New York Police Department, besides having a woman director who ranks as Deputy Police Commissioner, has a staff of 182 men and women, including a deputy in-

spector, police lieutenants and sergeants, patrolmen and patrolwomen, and twenty-five crime prevention investigators with special training and experience in social work. The wayward minor group between the ages of 16 and 21 is the group at which the service is mainly aimed. Only 41 of a total boys' club membership of 5,000 were among the 421 boys brought before the juvenile court of Worcester, Massachusetts.

HEALTH

The epidemic of infantile paralysis, most prevalent in New York City and vicinity during the year, showed a mortality of 12 per cent compared with 27 per cent in the 1916 epidemic. A clearing house for after-care has been developed in New York City. The Metropolitan Life Insurance Company reports 1930 as the best health year on record, with a general death rate for its insured, ages one year and over, as only 8.3 per thousand, one per cent lower than in 1927, previously the lowest record. A new low death rate was also established for tuberculosis, measles, scarlet fever, whooping cough and diphtheria among its policyholders, the combined rate on the first four being 26 per cent lower than the 1929 rate, and the diphtheria rate one-third lower as compared with that year. The Commonwealth Fund has now added the State of Mississippi to Tennessee and Massachusetts for areas of health demonstration programs.

MISCELLANEOUS

Industrial Accidents.—The Illinois Department of Labor reports that in 2819 industrial accidents to minors under eighteen years of age in a three-year period there is shown a higher average severity for minors under 15 than for those 16 years of age, and a higher average severity for those 16 than for those 17 years of age.

Under-age Marriages.—The State of New York had 2838 brides and 2515 grooms that were under the age of consent, which is eighteen years for females and twenty-one years for

males. In 33 marriages in which the brides were fourteen years of age, 30 were native born, and in 198 in which the brides were fifteen years of age, 178 were native born. All of the eleven grooms of 16 years and 79 of the 84 grooms of seventeen years were native born.

Visiting housekeeper service has been established in New York City similar to that available in Philadelphia, Chicago, and Boston, to provide adequate care in their own homes for children whose mothers are ill or away from home for hospital treatment or convalescent care, making a scattering of the children unnecessary. The housekeepers usually stay in the home during the day, from nine to six, and carry responsibility for all the household tasks. Four institutes for children's institution workers, and principally for house or cottage mothers, were held at Clinton, S. C., and Charlotte, Greensboro and Raleigh, N. C., under the auspices of the Tri-State Conference of Orphanage Workers, with instructors from the American Child Health Association, the National Recreation Association, and the Child Welfare League of America. Two hundred and thirty children's workers were enrolled. For the welfare of children of Porto Rico a summer course in social work was organized at the University of Porto Rico. A supervisor of social work in second unit schools in the Department of Education and a juvenile probation officer were appointed. Three Philadelphia day nurseries have introduced foster day care instead of institution care as a means of giving assistance to mothers while they are at work. It is urged that this plan provides a normal home environment and considerably reduces the overhead cost. The National Federation of Day Nurseries reports that group care of infants involves special risks and should be avoided if possible, and that it is doubtful whether any nursery should undertake responsibility for little babies unless it can provide a registered nurse or a nurse with special training and can segregate the babies from the other children.

XV. SOCIAL PROBLEMS AND CONDITIONS

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

(For further information, the reader may address the following organizations)

JUSTICE AND MAINTENANCE OF ORDER

- AMERICAN BAR ASSN., Section on Criminal Law, Endicott Bldg., St. Paul, Minn.
AMERICAN CIVIL LIBERTIES UNION, 100 Fifth Ave., New York City.
AMERICAN COUNCIL OF LEARNED SOCIETIES, 597 Fifth Ave., New York City.
AMERICAN INSTITUTE OF CRIMINAL LAW AND CRIMINOLOGY, 357 E. Chicago Ave., Chicago, Ill.
AMERICAN LAW INSTITUTE, 3400 Chestnut Street, Philadelphia, Pa.
AMERICAN PRISON ASSN., 135 E. 15th St., New York City.
NATIONAL COMMITTEE ON PRISONS AND PRISON LABOR, 730 Fifth Ave., New York City.
NATIONAL CRIME COMMISSION, 120 Broadway, New York City.
NATIONAL POLICE CONFERENCE, 240 Centre St., New York City.
NATIONAL PROBATION ASSN., INC., 370 Seventh Ave., New York City.
NATIONAL SOCIETY OF PENAL INFORMATION, 114 E. 30th St., N. Y. C.
SOCIETY FOR THE PREVENTION OF CRIME, 177 William St., New York City.
WOMEN'S PRISON ASSN., 110 Second Ave., New York City.

SOCIAL ORGANIZATIONS

- AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE, 3622 Locust St., West Philadelphia, Pa.
AMERICAN NATIONAL RED CROSS, 17th and D Sts., N. W., Washington, D. C.
AMERICAN SEAMEN'S FRIEND SOCIETY, 72 Wall Street, New York City.
AMERICAN SOCIETY FOR THE PREVENTION OF CRUELTY TO ANIMALS, 50 Madison Ave., New York City.
AMERICAN SOCIETY FOR THRIFT, 9 E. 46th St., New York City.
BOY'S CLUB FEDERATION, 420 Lexington Ave., New York City.
BOY SCOUTS OF AMERICA, 2 Park Ave., New York City.
CHILDREN'S AID SOCIETY, 105 E. 22nd St., New York City.

- CIVIC FORUM, 123 W. 43rd St., New York City.
FEDERAL COUNCIL OF CHURCHES, ETC.—Commission on the Church and Social Service, 105 E. 22nd St., New York City.
GIRLS' FRIENDLY SOCIETY IN AMERICA, 15 E. 40th St., New York City.
GIRLS' SERVICE LEAGUE OF AMERICA, 138 E. 19th St., New York City.
HUMANITARIAN LEAGUE, INC., 131 W. 74th St., New York City.
HUMAN PROGRESS ASSN., 220 W. 42nd St., New York City.
INTERCOLLEGIATE SOCIALIST SOCIETY, 70 Fifth Avenue, New York City.
NATIONAL CATHOLIC WELFARE CONFERENCE, 1312 Massachusetts Ave., N. W., Washington, D. C.
NATIONAL CONFERENCE OF SOCIAL WORK, 25 E. 9th St., New York City.
NATIONAL CONFERENCE FOR THE SOCIAL STUDIES, 671 Park Ave., New York City.
YOUNG MEN'S CHRISTIAN ASSN., International Committee, 347 Madison Ave., New York City.

SOCIAL FRATERNITIES

- ALLIED PATRIOTIC SOCIETIES, INC., 299 Madison Ave., New York City.
ANCIENT & ACCEPTED SCOTTISH RITE OF FREEMASONRY,—Northern Jurisdiction, 117 Statler Building, Boston, Mass.—Southern Jurisdiction, 1733 16th St., Washington, D. C.
BENEVOLENT AND PROTECTIVE ORDER OF ELKS OF THE U. S. A., 2750 Lake View Ave., Chicago, Ill.
INDEPENDENT ORDER OF ODD FELLOWS, 12 West Chase St., Baltimore, Md.
INTERNATIONAL ADVERTISING ASSN., 420 Lexington Ave., N. Y. C.
INTERNATIONAL ASSN. OF LIONS CLUBS, 350 McCormick Building, Chicago, Ill.
KIWANIS INTERNATIONAL, 164 W. Jackson Blvd., Chicago, Ill.
KNIGHTS OF COLUMBUS, P. O. Box 1670, New Haven, Conn.
KNIGHTS OF THE KU KLUX KLAN, INC., 2621 Peachtree St., Atlanta, Georgia.

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

KNIGHTS OF PYTHIAS, 754 Security Building, Minneapolis, Minn.
 LOYAL ORDER OF MOOSE, Mooseheart, Ill. (Supreme Lodge of the World).
 MODERN WOODMEN OF AMERICA, 1504 Third Ave., Rock Island, Ill.
 ROYAL ARCANUM SUPREME COUNCIL, 407 Shawmut Ave., Boston, Mass.
 ROTARY INTERNATIONAL, 211 W. Wacker Drive, Chicago, Ill.
 WOODMEN OF THE WORLD, Sovereign Camp, 14th and Farman Sts., Omaha, Nebraska.

(SOCIAL) HOME LIFE

LANDLORDS' COOPERATIVE ASSN., 116 Nassau St., New York City.
 NATIONAL HOUSING ASSN., 105 E. 22nd St., New York City.
 NATIONAL PLANT, FLOWER & FRUIT GUILD, 70 Fifth Ave., N. Y. C.
 NEW YORK ASSN. FOR IMPROVING THE CONDITION OF THE POOR, 105 E. 22nd St., New York City.
 OWN-YOUR-HOME EDUCATIONAL CAMPAIGN FOUNDATION, 524 First Ave., New York City.
 OWN-YOUR-HOME LEAGUE, INC., 151 W. 33rd St., New York City.

(SOCIAL) CHILDREN

BIG BROTHER MOVEMENT, INC., 315 Fourth Ave., New York City.
 BIG BROTHER AND BIG SISTER FEDERATION, INC., 425 Fourth Ave., New York City.
 CAMP FIRE GIRLS, INC., 31 E. 17th St., New York City.
 CHILD CONSERVATION LEAGUE OF AMERICA, 205 W. Monroe St., Chicago, Ill.
 CHILD WELFARE LEAGUE OF AMERICA, 130 E. 22nd St., New York City.
 CHILDREN'S AID SOCIETY, 105 E. 22nd St., New York City.
 HEBREW SHELTERING GUARDIAN SOCIETY OF NEW YORK, Pleasantville, N. Y.
 NATIONAL CHILD LABOR COMMITTEE, 215 Fourth Ave., New York City.
 NATIONAL CHILD WELFARE ASSN., 70 Fifth Ave., New York City.
 SANTA CLAUS ASSN., INC., 152 W. 42nd St., New York City.

(SOCIAL) HEALTH

AMERICAN BIRTH CONTROL LEAGUE, 152 Madison Ave., New York City.

AMERICAN CHILD HEALTH ASSN., 370 Seventh Ave., New York City.
 AMERICAN FOUNDATION FOR THE BLIND, INC., 480 Lexington Avenue, New York City.
 AMERICAN MISSION TO LEPERS, 156 Fifth Ave., New York City.
 AMERICAN POSTURE LEAGUE, INC., 1 Madison Ave., New York City.
 AMERICAN SOCIAL HYGIENE ASSN., INC., 370 Seventh Ave., New York City.
 ANTI-CIGARETTE LEAGUE OF NEW YORK STATE, 209 W. 107th St., New York City.
 BENEVOLENT SOCIETY OF THE U. S. FOR THE PROPAGATION OF CREMATION, 1828 Barnes St., New York City.
 COMMITTEE ON DISPENSARY DEVELOPMENT, 151 Fifth Ave., N. Y. C.
 EUGENICS RESEARCH ASSN., Cold Spring Harbor, L. I., N. Y.
 NATIONAL COMMITTEE FOR THE DISABLED, 245 E. 23rd St., New York City.
 NATIONAL HEALTH COUNCIL, 370 Seventh Avenue, New York City.
 NATIONAL HOUSING ASSN., 105 E. 22nd St., New York City.
 PLAYGROUND AND RECREATION ASSN. OF AMERICA, 315 Fifth Ave., New York City.

(SOCIAL) MORALS

AMERICAN ASSN. OF SOCIAL WORKERS, 130 E. 22nd St., New York City.
 AMERICAN FUND FOR PUBLIC SERVICE, INC., 2 W. 13th St., New York City.
 AMERICAN HUMANE ASSN., 80 Howard St., New York City.
 ANTI-PROFANITY LEAGUE, Ware, Mass.
 CHARITY ORGANIZATION SOCIETY OF THE CITY OF NEW YORK, 105 E. 22nd St., New York City.
 CHICAGO CRIME COMMISSION, 300 W. Adams St., Chicago, Ill.
 MORALITY LEAGUE OF AMERICA, 222 Madison Ave., New York City.
 NATIONAL CHRISTIAN LEAGUE FOR PROMOTION OF PURITY, 5 E. 12th St., New York City.
 NATIONAL COMMITTEE FOR BETTER FILMS, 70 Fifth Ave., New York City.
 NATIONAL SAVE-A-LIFE LEAGUE, INC., 50 E. 42nd St., New York City.

XV. SOCIAL PROBLEMS AND CONDITIONS

NEW YORK SOCIETY FOR THE SUPPRESSION OF VICE, 215 W. 22nd St., New York City.

NON-SMOKERS' PROTECTIVE LEAGUE OF AMERICA, 101 W. 72nd St., New York City.

SAFETY FIRST LEAGUE, 47 W. 47th St., New York City.

TRAVELERS' AID SOCIETY OF N. Y., 144 E. 44th St., New York City.

(SOCIAL) TEMPERANCE

ANTI-SALOON LEAGUE OF AMERICA, 370 Seventh Ave., New York City.

ASSOCIATION AGAINST THE PROHIBITION AMENDMENT, Room 935-941 National Press Building, Washington, D. C.

CATHOLIC TOTAL ABSTINENCE UNION OF AMERICA, Pittsburgh, Pa.

INTERNATIONAL NARCOTIC CRUSADE, Inc., 156 Fifth Ave., New York City.

MODERATION LEAGUE, Inc., 385 Madison Ave., New York City.

NATIONAL TEMPERANCE SOCIETY, 289 Fourth Ave., New York City.

WORLD LEAGUE AGAINST ALCOHOLISM, 150 Fifth Ave., New York City.

FOUNDATIONS

CARNEGIE ENDOWMENT FOR INTERNATIONAL PEACE, 2 Jackson Place, Washington, D. C.

CARNEGIE FOUNDATION, 522 Fifth Ave., New York City.

CARNEGIE HERO FUND COMMISSION, 2307 Oliver Building, Pittsburgh, Pa.

CARNEGIE INSTITUTION OF WASHINGTON, 16th and P Sts., N. W., Washington, D. C.

GENERAL EDUCATION BOARD, 61 Broadway, New York City.

GUGGENHEIM FOUNDATION, 551 Fifth Ave., New York City.

HALL OF FAME FOR GREAT AMERICANS, University of the City of New York, New York City.

MORO EDUCATIONAL FOUNDATION, 475 Fifth Ave., New York City.

ROCKEFELLER FOUNDATION, 61 Broadway, New York City.

ROCKEFELLER INSTITUTE, York Ave. and 66th St., New York City.

ROOSEVELT MEMORIAL ASSN., 28 E. 20th St., New York City.

RUSSELL SAGE FOUNDATION, 130 E. 22nd St., New York City.

WOODROW WILSON FOUNDATION, 6 E. 39th St., New York City.

WOMEN'S WORK AND PROGRESS

AMERICAN ASSN. OF UNIVERSITY WOMEN, 1634 I St., N. W., Washington, D. C.

AMERICAN NURSES' ASSN., 370 Seventh Ave., New York City.

AMERICAN WOMEN'S ASSN., Inc., 220 Madison Ave., New York City.

CHURCH WOMEN'S LEAGUE FOR PATRIOTIC SERVICE, Inc., 132 E. 57th St., New York City.

GENERAL FEDERATION OF WOMEN'S CLUBS, 1734 N. St., N. W. Washington, D. C.

NATIONAL AMERICAN WOMAN SUFFRAGE ASSN., 171 Madison Ave., New York City.

NATIONAL ASSOCIATION OF WOMEN PAINTERS AND SCULPTORS, 17 E. 62nd St., New York City.

NATIONAL COUNCIL OF ADMINISTRATIVE WOMEN IN EDUCATION, 1211 Gilpin Ave., Wilmington, Delaware.

NATIONAL COUNCIL OF WOMEN, U. S. A., 370 7th Ave., New York City.

NATIONAL FEDERATION OF COLLEGE WOMEN, Rolla, Mo.

NATIONAL LEAGUE OF GIRLS' CLUBS, 472 W. 24th St., New York City.

NATIONAL LEAGUE OF WOMEN VOTERS, 532 17th St., N. W., Washington, D. C.

NATIONAL WOMAN'S CHRISTIAN TEMPERANCE UNION, 1730 Chicago Ave., Evanston, Ill.

NATIONAL WOMAN'S PARTY, 21 First St., N. E., Washington, D. C.

NATIONAL WOMAN'S RELIEF CORPS, 64 Spring St., Oberlin, Ohio.

PROFESSIONAL WOMEN'S LEAGUE, 56 W. 53rd St., New York City.

SOUTHERN WOMEN'S EDUCATIONAL ALLIANCE, Hotel Richmond, Richmond, Va.

WOMEN'S CHRISTIAN TEMPERANCE UNION, 1730 Chicago Ave., Evanston, Ill.

WOMEN'S EDUCATIONAL AND INDUSTRIAL UNION, 264 Boylston St., Boston, Mass.

WOMEN'S ROOSEVELT MEMORIAL ASSN., Roosevelt House, 28 E. 20th St., New York City.

WOMEN'S TRADE UNION LEAGUE, 247 Lexington Ave., New York City.

DIVISION XVI

LABOR AND LABOR LEGISLATION

LABOR CONDITIONS AND ORGANIZATIONS

By ETHELBERT STEWART

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THE ECONOMIC SITUATION IN LABOR

The past two years have been a period of stress for all workers, organized and unorganized. Widespread unemployment, short-time and part-time work, and reduced wage rates, with resultant severe drop in annual earnings, have combined to bring about a decided lowering of conditions and standards. The displacement of workers by the adoption of new methods and new machines continues, adding its share to the increasing number of unemployed. Strenuous efforts have been made to cope with the situation, through the organization of relief, division of available work, provision of public works, and even in some cases reversion to hand instead of machine work as a method of employing more workers. Probably as a direct result of the general economic situation, the five-day week has had greater and greater acceptance in industry.

Many plans, programs, and suggestions have been advanced as to means not only of weathering the present situation but of preventing its recurrence. Employers' organizations, the American Federation of Labor, various committees appointed by the President, have all given it their earnest consideration. From a number of sources has come the recommendation that a National Economic Council be set up, whose duty would be economic planning, the guidance of the direction of vocational education in relation to industrial development.

with a view to preventing the influx of workers into declining industries, etc. In this connection might also be mentioned the studies, being carried on by the United States Bureau of Labor Statistics, of the shift in employment from old to new industries and the effects of technological changes in industry as they affect employment.

UNIONS AND THEIR RELATIONS WITH MANAGEMENT

Shoe Industry.—In some industries the unions are confronted with an employment condition with which they are powerless to cope. These are mainly the over-developed industries, such as mining, the boot and shoe industry, etc. In an industry like the latter, where the necessary production could be maintained with about 15 per cent of the present number of establishments, that is to say, in an industry with 85 per cent too many plants, continuous full-time operation of all plants is impossible. Thus, a great amount of unemployment and underemployment is inevitable, given the present number of establishments and of employees.

Coal Mining.—The coal miners have everywhere been subjected to economic pressure. The situation in that overdeveloped industry has forced down the level of subsistence in some places to an extremely low point. In Colorado the general movement to lower miners' wages was frowned upon by the Industrial Commission of that State, which di-

rected that the existing rate be maintained. A bright spot in the coal-mining industry in that State is afforded by the relations between the Rocky Mountain Fuel Co. and its employees, members of the United Mine Workers of America. The company maintains a high level of wages, while the union reciprocates by doing all in its power to increase the sale of the company's product. In anthracite districts Nos. 1, 7, and 9, the same union was successful in obtaining an agreement, running to 1936, maintaining the 1930 scale.

Strikes.—The strike, as a method of enforcing demands, has been steadily declining in favor. The high point occurred in 1917. Since that time, with some slight fluctuations, the tendency has been steadily downward, until in 1928 occurred the smallest number of strikes yet recorded. The year 1930 ranked next to 1928 in the small number of strikes taking place. The first half of 1931, however, during which many agreements expired and had to be negotiated again, showed an increase as compared with the same period of 1930 (415 as against 335).

Board of Trade Claims.—The abolition of jurisdictional disputes in the building trades, a costly and vexing source of trouble, was aimed at by the establishment of a board of trade claims, early in 1931.

Union-management Cooperation.—Another item of interest in the field of industrial relations is the adoption of union-management cooperation in two plants in entirely unrelated industries,—one a pump manufacturing establishment which has adopted a cooperative plan with its union machinists, and the other a manufacturer of sirup which has adopted such a plan with the sirup workers' local.

LABOR LAWS AND COURT DECISIONS

Wage Rates on Public Works.—The concern that advantage might be taken of the depression to force down the standard of wages and working conditions has been manifested in the passage in a number of

states of measures specifying that the "prevailing rate of wages" must be paid on all public works. An act of Congress, in 1931, made the same provision with regard to employment on contracts for work done for the Federal Government, the question as to what is the "current rate of wages" in each case being left to determination by the Secretary of Labor. There is some doubt in the various states as to the constitutionality of this type of law, and in the one State (Arizona) in which, thus far, the matter has been tested in the courts, the act has been declared unconstitutional.

Employment Preference.—Another indication of the widespread concern regarding employment is given by the passage of acts requiring that in employment on public works, preference shall be given to citizens of the United States, to citizens of the state in question, to ex-soldiers, etc. In 1930, New Jersey passed a law (amended in 1931) forbidding discrimination on account of age in employment on public works.

"Yellow Dog" Contracts.—Labor's campaign against the so-called "yellow dog" contract, by which employers force their employees to refrain from joining labor organizations, has begun to show results. In 1929, Wisconsin passed an act forbidding the use of such contracts. No further action was secured in 1930, but the year 1931 has been marked by the passage of similar laws in Arizona, (ch. 19), Colorado (ch. 112), Ohio (No. 108, p. 562), and Oregon (ch. 247). The Indiana Legislature passed a like measure, but it was vetoed by the governor, while in Massachusetts a measure introduced into the legislature failed of passage after the State supreme court had rendered an advisory opinion to the effect that such a law would be unconstitutional.

Injunction Limitations.—An act (No. 311) was passed in Pennsylvania, limiting the use of injunctions in labor disputes and providing that hereafter injunctions may not be issued without open court hearings. Such injunctions can be issued only against designated persons and for

specific acts. The act also provides for jury trials in cases of contempt of court.

Wage Claims Court.—In Colorado the wage earner whose employer tries to defraud him of his wages can hereafter bring his claim (if not exceeding \$100) to the county "wage claims court," established by act (ch. 170) of the 1931 legislature.

Collective Agreements.—An interesting court action in the labor field was the granting, early in 1931, by the New York Supreme Court, of an injunction restraining a group of employers in the steel-contracting industry from violating their agreement with the union by operating an open shop. This action is significant in that it holds collective agreements to be enforceable and grants immediate relief to the labor organization involved.

WAGES, EMPLOYMENT, AND COST OF LIVING

Union Wage Rates.—The regular survey made by the United States Bureau of Labor Statistics of union rates of wages per hour in the principal time-work trades showed that in general these rates increased slightly from 1930 to 1931 and were at a higher level in 1931 than in any preceding year. In 99 cases the unions were successful in obtaining higher rates in 1930 than in 1929, in 541 cases the rate remained unchanged, and in 39 cases the organization had to accept lower rates.

Decreases in Earnings.—Notwithstanding these gains of organized labor, however, the recent wage surveys of the Bureau of Labor Statistics,—in the men's clothing, hosiery and underwear, lumber, motor-vehicle, bituminous coal, and iron and steel industries—which cover unorganized as well as organized workers, show quite general decreases in full-time weekly earnings. In some instances this was due mainly or partly to decreased hours of labor, but generally it was the result of lower hourly rates. The decreases in average weekly full-time earnings shown by these surveys ranged from 1.7 per cent (from 1929 to 1931) in the blast-furnace department of the

iron and steel industry, to 32.1 per cent (in semimonthly earnings), in bituminous coal mining (from 1929 to 1931). The only increases in earnings for a full-time week were in the hosiery industry, in which there was an increase of 3.1 per cent from 1928 to 1930, and in the bessemer-converter department of the iron and steel industry where there was an increase of 2.5 per cent from 1929 to 1931.

Decrease in Numbers Employed.—In addition to decreases in rates of wages there has occurred a tremendous decrease in the numbers employed in the various industries. The Federal census of unemployment showed 2,429,062 able-bodied persons totally unemployed in April, 1930, and it was estimated that by January, 1931, the number had risen to 6,050,000. And these figures took no account of either short-time or part-time work, which also are powerful factors in reducing the yearly income. Data collected by the Bureau of Labor Statistics show that in every one of the industries covered by its monthly employment survey the number on the pay roll decreased from June, 1930, to June, 1931, the decreases ranging from 5.1 per cent in retail trade to 29.1 per cent in metal-liferous mining. Per capita earnings (which show the result of lower wage rates and short-time and part-time work) showed decreases ranging from 0.1 per cent in the production of crude petroleum to 21.9 per cent in bituminous coal mining. These decreases, however, were mitigated to some degree by the 9.8 per cent decrease in the cost of living which occurred in the same period.

BENEFITS AND INSURANCE

Relief Work.—The task of public relief agencies has been enormously increased and continues to grow as the period of depression lengthens and as the small savings of thrifty workers become exhausted. From 1929 to 1930 the cost of family relief in 100 cities increased from \$20,891,726 to \$39,397,480, or 89 per cent. The figures for 1931 will undoubtedly show a further rise.

Organization Benefits.—Labor

XVI. LABOR AND LABOR LEGISLATION

organizations do their best to keep their members from the necessity of asking for charity. This they do through a varied system of benefits, paid for death, sickness, illnesses or disabilities peculiar to the particular trade, old age, permanent disablement, unemployment, strikes, etc. Enormous amounts are disbursed in this way, by labor unions, each year. In 1929, the executive council of the American Federation of Labor reported, labor organizations paid in benefits for sickness, death, unemployment, old age, disability, etc., the sum of \$32,242,444. In 1930, the disbursements for benefits totaled \$36,697,980. The expenditure for every type of benefit except "miscellaneous" showed an increase, that for unemployment jumping from \$276,718 to \$3,311,280.

Care of Aged.—At the end of 1930, public old-age pension laws had been enacted in California, Colorado, Kentucky, Maryland, Massachusetts, Minnesota, Montana, Nevada, New York, Utah, Wisconsin, and Wyoming, and Alaska. The year 1931 saw the passage of new laws in Delaware, Idaho, New Hampshire, New Jersey, and West Virginia and the passage of amendments to existing laws in a number of others. In Indiana a measure of this type was passed by the legislature but was vetoed by the governor. In Pennsylvania the constitution was amended to allow payment of pensions; this measure must be repassed in 1933 and then submitted to referendum. The Delaware Legislature of 1931 also passed an act of abolishing almshouses and providing for the erection of a State Welfare Home for aged who must have institutional care. Thus the end

of 1931 shows 17 public old-age pension laws on the statute books, with at least 60,000 persons receiving aid under their provisions.

Although most labor unions feel that society, rather than an individual organization, should provide for superannuated wage earners, nevertheless a number of unions have established old-age pensions, and others have had the matter under consideration in their recent conventions.

BUSINESS ENTERPRISES OF ORGANIZED LABOR

General.—There has been little or no expansion of trade-union activity, recently, into fields collateral to their primary business of collective bargaining. In fact, the tendency now seems to be in the reverse direction. The locomotive engineers, formerly the chief exponent of the "union in business" idea, are now definitely out of their former business ventures, with the exception of their financial interest in the Venice, Fla., real-estate development. At the 1931 convention of this brotherhood, the sentiment was unanimous that "in future the labor concerns of the membership must be the main consideration of the organization." The railroad trainmen have even gone so far as to sell their headquarters building, because of the decision of their convention that the brotherhood should not "engage in any line of business except that of carrying out its mission as a labor organization."

Labor Banks.—Considering the large number of bank failures in the last two years, it is not surprising to find that the number of labor banks decreased from 22 in 1929, to 14 in 1930, and to 11 in 1931.

LABOR LEGISLATION

By IRENE OSGOOD ANDREWS

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WORKMEN'S COMPENSATION

Benefits.—Wisconsin increased the compensation rate for disability from 65 to 70 per cent. It is the first state to provide a compensation rate amounting to more than two-thirds

LABOR LEGISLATION

of wages. Maryland raised the weekly maximum from \$18 to \$20. Alabama and Pennsylvania enacted amendments providing double compensation for minors injured when illegally employed; North Carolina made provision for a second injury fund. More liberal medical services, extended coverage and increased compensation for specific disabilities were provided in several states.

Waiting Period.—The waiting period was reduced from seven to three days in Wisconsin and from fourteen to seven days in Delaware.

Vocational Rehabilitation.—A division for vocational rehabilitation was created under the state board of vocational education to administer the Rehabilitation Act in Illinois. In Maine an unpaid vocational education board was created in the department of education.

OLD AGE AND RETIREMENT LAWS

Pensions.—Five additional states adopted old age pension laws, increasing the number having such legislation to seventeen. Delaware, Idaho, New Hampshire and New Jersey adopted mandatory, statewide laws. West Virginia enacted legislation permitting county courts to establish old age pension systems after submitting the question to popular referendum. Colorado and Wisconsin adopted amendments making the old age pension law compulsory for all counties. The pension age was reduced from 70 to 65 years in Colorado. Administration of the old age pension law was transferred from the courts to the county commissioners in Maryland and Minnesota. Delaware provided for administration by an old age welfare commission. The law is to be administered by county commissioners in Idaho and New Hampshire, by county welfare boards in New Jersey, and by county courts in West Virginia. Commissions were created to study old age dependency in Illinois and Oregon. Constitutional amendments to permit old age legislation were advanced in Missouri and Pennsylvania.

Public Employees.—A state employees' retirement fund, optional for present employees and compulsory for future employees, was created in Colorado. A contributory state employees' retirement fund was created in California. Amendments to retirement laws were passed in several states.

WAGE LEGISLATION

Thirteen states amended wage payment laws. Extension of powers in wage collections was granted to labor officials in California, Nevada, New Mexico, Oregon and Wisconsin. Special "wage claim courts" were established in each county in Colorado, to be presided over by the Justices of the Peace and to have jurisdiction in all cases involving wage claims of not more than \$100. Mechanics' lien laws were amended in seven states and in Porto Rico, and threshers' and other lien laws in six states. Legislation requiring contractors to furnish bonds for the protection of laborers and material men was passed in Illinois, Montana and Pennsylvania.

HOURS OF LABOR

Public Works.—California amended the law regulating hours on public works to cover subcontractors. In Illinois contractors on public works were forbidden to employ laborers more than eight hours a day except in specified cases. The Kansas and Wisconsin laws fixing hours on public works were amended to provide that hour requirements of the law be included in contracts. North Carolina empowered the personnel director to determine hours for state employees. Oregon revised the exceptions to the eight-hour law for public employees. The Wyoming eight-hour law for laborers on public works was amended to declare specifically that it was unlawful to require or permit employees to work more than the specified time.

Private Employment.—Maine replaced the nine hour day for women and eight hour day for minors in laundries by a 54 hours maximum week; North Carolina reduced the

weekly maximum from 60 to 55 hours; Nebraska passed a law forbidding motor carriers to require or permit drivers to remain on duty more than 12 consecutive hours; Missouri repealed the hour law for railroad workers; Arizona excepted employees in railroad yard offices from women's hour law; California required that trainmen and enginemen employed on any railroad under control of the state board of harbor commissioners must be paid for overtime in excess of eight hours in any twenty-four hour period. Wisconsin provided penalties for violation of women's hour law in hotels. Wyoming amended the eight hour law for miners and smelters, declaring specifically that it is unlawful to require or permit employees to work more than the specified time.

Rest Periods.—Saturday half-holiday was granted to government employees in Alaska and Colorado and to civil employees of the United States and District of Columbia. Annual vacations for government employees were increased from two weeks to 30 days in Alaska. In California, county officers and employees, other than elected officers under bond, were granted not exceeding 15 days annual vacation with pay. A five-day week was established in New York for laborers and mechanics other than supervisory workers employed on public works contracts negotiated between Sept. 22, 1931, and Dec. 1, 1932. North Carolina granted to the personnel director of the state department of labor the power to regulate the vacations of state employees. Wisconsin petitioned Congress to provide for a five day week throughout the government service. Maryland and New Mexico modified Sunday observance legislation, while Wisconsin extended it to cover bakeries in counties having a population of 500,000. Nebraska required a 30-minute lunch period for mechanical laborers and amended the women's night work law to permit employment until 12:30 A. M. instead of 10 P. M. New York required mercantile establishments em-

ploying women to give the labor commissioner at least four hours' notice of intent to work overtime and reduced the former overtime allowance of 78 hours a year to permit only 22 hours overtime for six day workers and 35 hours for 5½ day workers. One ten-hour day a week was permitted to provide a short work day. Employment of girls from 16 to 18 years of age in mills, factories or canneries between 9 P. M. and 6 A. M. was forbidden under penalty of fine, imprisonment or both. Rhode Island appointed a commission to study night employment of women.

EMPLOYMENT

Employment Agencies.—Fee-charging employment agencies were regulated in Arizona by annual renewal of the license through the industrial commission, the fee being based on the total receipts of the agency, and by requiring a bond of \$1,000. Licenses of private agencies may be revoked in California for violation of certain statutes regulating railroads and bus lines. The Illinois Department of Labor was authorized to make rules for the conduct of private employment agencies in accordance with the law. In Kansas employment agencies were forbidden to make any service charge in addition to the registration fee permitted by law. Michigan exempted employment agencies maintained by labor unions from employment agency law. Licenses for agencies may be refused in Arizona and Nevada when the public or private agencies already operating are considered sufficient for the needs of the community. Labor officials in California and New Mexico were given power to assist in the collection of claims against employment agencies. Additional public employment offices were authorized in Arizona, Illinois, Michigan, Missouri, New Mexico and Vermont. The labor departments of Minnesota and Pennsylvania were authorized to conduct experimental employment offices.

Public Works.—Congress enacted legislation for the advance planning and timing of public works to relieve depressions. Several states attempted to increase public works construction to help relieve the unemployment situation. Preference to local residents and discrimination against aliens in employment on public works was specified in the legislation of 15 states. Several states specified the payment of the prevailing rate of wages in the locality.

Unemployment Relief.—New York State appropriated \$20,000,000 to be raised by a 50 per cent increase in the income tax, to be expended for emergency work programs and direct relief. New Jersey passed a somewhat similar act, carrying an appropriation of \$8,000,000. Rhode Island enacted a law setting aside a treasury surplus of \$1,500,000 from which the cities might borrow for unemployment relief, provided that the loans were repaid not later than June 30, 1933. Local authorities in Ohio were authorized to issue bonds or notes not to exceed in total one-twentieth of 1 per cent of their assessed valuation to create emergency poor relief funds.

Unemployment Commissions.—Commissions for the study of unemployment and unemployment insurance were authorized by the legislatures of California, Connecticut, Massachusetts, New York, Ohio, Oregon, Tennessee and Wisconsin and by the United States Senate. In Utah a legislative committee was created to determine what public improvement projects might advantageously be undertaken immediately.

SAFETY AND HEALTH

Children and Minors.—Occupations prohibited for minors under 16 were extended in Maine and North Carolina. The age limit for children employed in canneries was changed from 12 to 14 years in Delaware. In Vermont the commissioner of industries was empowered to refuse employment permits to children physically unfit in his judgment for the work in question. Educational re-

quirements for minors were amended in Alabama, California, Connecticut, Maine, Maryland and Pennsylvania. Apprenticeship was regulated in Oregon. Colorado ratified the Federal child labor amendment.

Factories.—Legislation was enacted in California and Vermont concerning fire hazards, and in Rhode Island relating to sanitary and ventilating devices.

Coal Mines.—Amendments were enacted relating to hoisting equipment in Arizona and to "man-trip" cars in Wyoming. Kansas reduced the membership of the mine examining board from four to three and amended the qualifications. Colorado amended the law relating to inspectors and the regulations governing use and storage of explosives. The metal mining law in Colorado was amended by extending the commissioner's authority to all pits, quarries, tunnels and mining operations other than coal mines. In Nevada the mine safety laws were extended and the inspectors' duties and powers increased.

Investigation.—Investigating commissions to study mining conditions in coal mines and to recommend accident prevention legislation were created in Illinois and Oklahoma.

Miscellaneous.—Maine passed a law to protect workers in compressed air, based upon the standard bill of the American Association for Labor Legislation. Laws regulating cleaning and dyeing establishments were adopted or amended in California, Michigan, Minnesota and Ohio. New Mexico enacted legislation requiring seats in all establishments where females are employed and requiring that employees be permitted to use them when not actively engaged in their duties. The Labor Department in North Carolina was granted power to regulate work places and working conditions.

COLLECTIVE BARGAINING

An outstanding piece of 1931 labor legislation was Wisconsin's labor code,—the first real Bill of Rights for labor in this country. Freedom

XVI. LABOR AND LABOR LEGISLATION

of collective bargaining was declared the policy of the state and "yellow dog" contracts were declared contrary to public policy and void. It was specifically declared legal to strike or organize regardless of such contracts and to engage in other non-violent union activities. The injustice of unrestricted use of injunctions in labor disputes was set forth and their content and use greatly limited. Other states declaring "yellow dog" contracts contrary to public policy and wholly void were Arizona, Colorado, Ohio and Oregon. Pennsylvania restricted labor injunctions. Michigan revised the penalties forbidding intimidation of employees.

ADMINISTRATION

Marked advances in administrative organization were made in Georgia, North Carolina and Porto Rico, where the enforcement of labor laws was consolidated in reorganized labor departments, and in New Mexico where a state labor department was

created for the first time. The North Carolina department was divided into a division of workmen's compensation, a division of standards and inspection, and a division of statistics. The child welfare commission was abolished and its powers, duties and personnel transferred to the new division of standards and inspection. The department is directed by a labor commissioner. In Georgia a consolidated department of industrial relations was created headed by three commissioners. A labor and industrial commission of three members was created in New Mexico. Congress amended the organic act of Porto Rico to establish an independent labor department and to make the former department of agriculture and labor a department of agriculture and commerce. In South Dakota the child welfare commission was authorized to employ a paid secretary and other assistants and its duties and powers were expanded.

LABOR IN POLITICS

By DAVID J. SAPOSS

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THE CASE OF SENATOR NORRIS

Since this was an "off" election year the general interest in political action was not widespread. Nevertheless because of the continuing depression the labor elements and their allies interested in independent political action profited from the situation. Nationwide attention was given to the subject when the League for Independent Political Action, through Professor John Dewey, called upon Senator Norris to "sever forever your connections with the political machine and form with those of us in the League for Independent Political Action and other liberal groups a new party to which you can give full allegiance." The immediate cause for this declaration was the failure of Congress to enact legislation dealing with problems accentuated by the economic cri-

sis. The revelations of the Nye Senate investigating committee that high officials of the Republican party had secretly sabotaged Senator Norris's campaign, leading to a public attack by the Executive Director of the Republican party, proclaiming that Senator Norris did not rightfully belong within its fold, also encouraged the leaders of the League. Senator Norris graciously declined the invitation, stating that "in a practical sense his (Professor Dewey's) advice cannot be followed, at least at this time."

UNION AND FARMER MOVEMENTS

Among the unions there also seems to be a renewed interest in independent political action. The president of the Full Fashioned Hosiery Workers has endorsed the idea. The

Brotherhood of Railway Clerks, declared at their recent convention that ultimately independent political action is inevitable. Union groups in various localities are again organizing local labor parties. Similarly, among the farmer elements that are accustomed to coöperate with labor in independent political action there also is a revival of interest. Townley, who was the mainstay of the Farmers Non-Partisan League is again active, this time favoring independent political action. The old Populist elements are once more banding together in the newly formed Liberty Party, headed by "Coin" Harvey, the famous Populist propagandist. It is reported that this new party is enlisting many adherents in the agricultural sections west of the Mississippi, and even in some southern states.

ACTIVITIES IN RELIGIOUS CIRCLES

Likewise an interest in independent political action is manifesting itself in religious circles that are ordinarily sympathetic with labor. The joint national organization of the college Y. W. C. A. and Y. M. C. A. associations, known as the National Council of Christian Associations, on the recommendation of its Economic Commission, endorsed political action either through the Socialist party or a new party with a Socialist program such as the League for Independent Political Action is advocating.

SOCIALIST ELECTION RESULTS

New York City.—The results of the elections, mostly municipal, also indicate a growing interest in independent political action. The various labor parties have again registered an increase in votes and have elected some of their candidates. In New York City, the Socialists also profited from the exposures of political graft made by a legislative committee. Many of their candidates were endorsed by the Citizens Union. The Bronx Bar Association endorsed three of the Socialist judicial candidates. Headed by Norman Thomas the Socialists carried on a vigorous campaign. Tammany, however, mustered

all its power and machinery. The Socialists charged illegal interference during the election, dishonest voting, and the failure to count many of their ballots. Even so Norman Thomas received 13% of the votes in Manhattan, as candidate for president of the Borough, whereas in the last Mayoralty campaign he received but 10%. Material vote increases were also registered for the other candidates.

Reading, Pa.—Socialist candidates in other centers also increased their votes and in some instances even elected their candidates. Reading, Pa., the only city in the country completely controlled by a Socialist administration reversed itself by electing a fusion ticket of Republicans and Democrats. However, the vote which the Socialists polled was much larger than that which swept them to victory in the previous election, which consisted of a three-cornered fight.

New England.—Bridgeport, Conn., proved the Socialist bright spot in this area. The Socialist mayoralty candidate ran a close second. The Socialists succeeded in electing "two candidates for the board of selectmen, and three city sheriffs."

Wisconsin.—The Socialists made additional gains. They reelected one member to the Milwaukee school board and also elected a new member. The Socialist mayors of Manitowoc and Iola were also reelected by clear majorities. Their mayoralty candidate in Racine was victorious. And in the by-election of District No. 1, for the successor to the late Congressman Henry Allen Cooper, the Socialist candidate registered an increase of 800%, running second with the LaFollette progressive being elected. In one of the industrial counties, Racine—the Socialist candidate led by 800 votes, and in another, Kenosha, he was only 500 votes behind the successful candidate.

Pennsylvania and Virginia.—In the Western Pennsylvania coal mining town of Nanty-Glo, the Socialists elected a city councilman, a Justice of the Peace and an assessor. In other sections of the country the Socialists also gained votes, even re-

ceiving a response in Virginia. In "five counties and five cities" of that State they were credited with 16% of the vote as compared with 4% in the previous election. They never "received as much as 1% before."

FARMER-LABOR

Minnesota.—The Farmer-Labor Party is growing in strength. In addition to its United States Senator, Congressman, Governor, Lieutenant-Governor, and a number of Assemblymen, it has now added the Mayor and four aldermen of Minneapolis to its list. It is predicted that they will elect the Mayor of St. Paul in the coming spring municipal election. The unions and the Socialists are supporting the Farmer-Labor Party.

THE COMMUNISTS

The Communists have devoted more energy in organizing political demonstrations and "hunger marches" than in electioneering. Nevertheless they did not entirely neglect the elections. In common with the other groups featuring independent political

action they also gained in votes. They received about a seventh of the vote in Salt Lake City, totalling over 5000. In the coal and steel regions of Western Pennsylvania and Eastern Ohio where the National Miners Union, led by Communists, conducted a bitterly fought strike last summer, they made a favorable showing. They even elected a councilman in Yorkville, Ohio.

LABOR UNION

Two conservative union men were also elevated to high municipal positions as a result of the non-partisan policy. The outcome of a successful mayoralty recall election in Seattle brought about the designation by the municipal council of Robert Harlan, a prominent state labor leader, as acting Mayor. David Levine, President of the Seattle Central Labor Union, was selected to fill Harlan's place as president of the City Council. Both of these men were formerly active in the Farmer Labor Party of the State of Washington.

EMPLOYMENT CONDITIONS

By SUMNER H. SLICHTER

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EFFECTS OF THE BUSINESS DEPRESSION

Manufacturing and Mining.—The steady progression of the depression during 1931 brought the output of manufactures and minerals down to 26 per cent below the 1923-1925 average and 42 per cent below the high of September, 1929. This was only 10.4 per cent above the low for the depression of 1921. Concomitant with the drop in production occurred a decrease in employment. Between September, 1930 and September, 1931 factory employment fell about 20 per cent. This was 30 per cent below September, 1929 and even 9.2 per cent below the low of the depression of 1921. Estimates of the number of

factory employees working only part time leave much to be desired, but the best information indicates that over half of the factory employees were working full time. In mining, employment fell about 14.8 per cent between September, 1930 and September, 1931 in the anthracite industry, 11.2 per cent in the bituminous, and 21.9 per cent in metalliferous mining. The drop in factory employment varied greatly in different industries. In those which cater to immediate needs, such as food products and textiles, it was relatively slight—5.8 per cent between September, 1930, and September, 1931, in the case of food products and 2.1 per cent in the case of textiles. On the other hand,

EMPLOYMENT CONDITIONS

in industries which do not serve immediate needs, the drop was much greater as the following examples indicate:

Drop in Employment September, 1930, to September, 1931	
	Per cent
Automobiles.....	12.8
Iron and steel.....	19.3
Lumber and its products..	21.2
Machine tools.....	37.0

Building Construction.—The depression in the building trades began earlier than in other branches of industry and has been unusually severe. Residential contracts, which in 1930 were 44 per cent below 1929, up to October, 1931, were 24 per cent below the corresponding period in 1930. Contracts on public works and public utilities held up well during 1930 and, in fact, slightly exceeded 1929. But this did not continue through 1931, and for the first ten months, contracts ran below 1930 by 31 per cent.

Railroads and Farms.—With a continued drop in railroad traffic, the financial condition of the railroads, which have large fixed charges represented by bonds, equipment notes, and leases, became rapidly worse. This led the roads drastically to curtail service and to reduce or defer maintenance work, with the result that railroad employment dropped from 1,485,906 in September, 1930, to 1,272,739 in September, 1931. On the other hand, farm population, which had been declining more or less steadily since about 1910, experienced a small increase. For the first time in over a decade the movement from city to farm exceeded the movement from farm to city. The Department of Agriculture estimates that the net movement from city to farm was 208,000. This, of course, represents, not an increase in the demand for farm labor, but rather a movement of unemployed city workers back to their homes. In the agricultural implement industry there was a sharp drop in employment of 55.6 per cent between September, 1930 and September, 1931.

Public Utilities, Trade and Hotels.—Among the steadiest branches

of business are public utilities, wholesaling, retailing, and hotels, all of which cater to a demand which is immediate and which cannot easily be postponed. In selected establishments in these industries employment changed as follows:

	Decrease Between Average for the Year 1929 and Sep- tember, 1931	Decrease Between Sep- tem- ber, 1930, and Sep- tember, 1931
	Per cent	Per cent
Telephone and telegraph..	15.0	12.3
Power, light, and water...	5.3	9.9
Electric railroads.....	16.0	8.5
Wholesale trade.....	14.9	9.1
Retail trade.....	13.4	5.9
Hotels.....	9.4	9.5

VOLUME OF UNEMPLOYMENT

Trends and Comparisons.—It is universally agreed that the volume of unemployment has been more or less steadily increasing, but the estimates of the present amount vary from 6,000,000 to as high as 10,000,000. Early in 1931 a special census survey of unemployment was made in 19 important cities. By comparing these results with those for the same cities in the nation-wide census of April, 1930, it is possible to make a rough estimate of the volume of unemployment in the entire country in January-February, 1931. On the basis of the special census, it is estimated that the number of unemployed in the United States increased from 3,500,000 in April, 1930 to about 6,000,000 in January, 1931. During most of 1931 unemployment was growing and, at the end of the year, was probably about 7,000,000. In July, 1931, the National Industrial Conference Board estimated, on the basis of the winter census and the trends indicated by the employment reports received monthly by the Bureau of Labor Statistics and the Board itself, that there were 7,213,497 unemployed.

Trade Union Returns.—The returns of the American Federation of Labor show the following unemployment rates among trade union members:

XVI. LABOR AND LABOR LEGISLATION

	All trades	Building trades	Printing trades	Metal trades	Other trades
	Per cent	Per cent	Per cent	Per cent	Per cent
Jan.-Oct., 1919.....	11.5	24.8	3.9	6.6	8.0
Jan.-Oct., 1930.....	21.5	39.0	6.4	19.3	13.7
Jan.-Oct., 1931.....	25.9	50.6	12.1	29.6	16.4

EFFORTS TO RELIEVE OR REDUCE UNEMPLOYMENT

Woods Committee.—As the depression persisted and as business went from bad to worse, the effort to encourage business enterprises to give work was replaced in the main by efforts to provide relief. In October, 1930, President Hoover appointed the President's Emergency Committee on Employment for the purpose of collecting and disseminating information and stimulating action in relieving unemployment by private enterprises, states, and municipalities. The committee was composed of 29 members, for the most part economists, social workers, and other experts in the field of employment, and it was headed by Col. Arthur Woods. There were three regional directors who were to help organize state and local committees. Subcommittees were formed to deal with various topics. These committees were small and chosen in the main from experts in the particular field. The Woods Committee had no work to give and no relief projects to direct. Its main accomplishment was to spread the practice of rationing work by private employers. Nevertheless, even in the spring of 1931, approximately two-thirds of the factory workers who had jobs were working full time. The committee recommended a large public works expansion program but the opposition of President Hoover prevented this program from being made public or recommended to Congress. As a result, the Federal Government has done almost nothing to relieve unemployment by increasing public construction over the normal amount. In the spring of 1931, the Woods committee disintegrated, largely because the expert members felt that their knowledge and advice had been disregarded by the President.

The Gifford Committee.—In August, 1931, the Woods committee was succeeded by the Gifford com-

mittee headed by W. S. Gifford, President of the American Telephone and Telegraph Company. This committee differs in personnel and policies from the Woods committee. It is a much larger body, consisting of about 60 members who, for the most part, are not experts but business men. The general committee is divided into four sub-committees as follows: Committee on the creation of employment, Committee on employment plans and suggestions, Committee on a program for Federal works and Committee on coordinate local relief campaigns. Up to the end of 1931, however, the work of the committee was confined in the main to helping local community chests and charities to raise funds for unemployment relief. Unfortunately it made available no helpful information concerning the ratio between the local unemployment load and local resources, it failed to make known the localities which are unable to bear their unemployment load and which need outside assistance, and it did nothing to encourage an adequate program of Federal public works.

PERMANENT RELIEF MEASURES

Unemployment Insurance.—The beginning of the third year of depression finds the United States still lamentably ill equipped with instruments for permanently meeting unemployment. The American Federation of Labor continues its refusal to endorse unemployment insurance but its opposition was notably weaker at the Vancouver convention in 1931 than at the Boston conventions of 1930. Prominent leaders of the conservative wing of the Federation publicly declared themselves for insurance, and many individual unions have done likewise.

Legislation.—Senator Wagner's bill for the collection of more comprehensive and accurate statistics on employment and unemployment fi-

nally became law. This is an important gain because policies and plans for dealing with unemployment should be based upon a knowledge of the facts. Senator Wagner's second bill, providing for the creation of a Federal Employment Stabilization Board to promote the forward planning of public works by the Federal Government and the expansion of public works during times of severe unemployment, was also enacted. His third bill for a nation-wide system of public employment offices to be established jointly by the Federal Government and the states was vetoed by the President.

Congress Appropriation.—Congress gave the Secretary of Labor an emergency appropriation of \$800,000 to expand the Federal employment service. The bill did not place the employees under the civil service (as

did the Wagner Bill) and the money has been spent for the most part in hiring trade union politicians who are inexperienced in employment office work. The appropriation may be regarded as almost completely wasted.

Rochester Measures.—Far more notable than the accomplishments of the national government or any state are those of the city of Rochester. These consist of (1) a community public employment office to which all leading employers in Rochester have pledged support, and (2) a scheme of voluntary unemployment insurance in which 16 leading industries of Rochester, including the Eastman Kodak Company and Bausch & Lomb, participate. It is proposed to create in Rochester a model labor market with an employment office manned by experts and capable of giving vocational guidance to adults.

MEDIATION AND ARBITRATION IN INDUSTRIAL DISPUTES

BY ETHELBERG STEWART

COMMISSIONER OF LABOR STATISTICS, DEPARTMENT OF LABOR

RAILROAD LABOR MEDIATION

Disputes.—The United States Board of Mediation was constituted under the terms of the Railroad Labor Act of 1926, to handle cases of dispute which the carriers and employees have been unable to settle in conference. When disputes between carriers and their employees can not be settled through mediation proceedings, the law directs that the Board of Mediation shall endeavor to induce the parties to submit their controversy to arbitration. In case all these efforts fail, and the Board of Mediation believes the controversy may result in serious interruption of interstate commerce, the President of the United States may appoint an emergency board to make an investigation and report to the President. There is, however, nothing savoring of compulsory arbitration in the act. Thus far, four emergency boards have been appointed.

Adjustments.—The Board began operations in July, 1926 since which time 618 cases involving changes in rates of pay, rules or working conditions have been submitted. During this period the Board has also received 596 cases involving grievances or differences arising out of the interpretation or application of existing agreements concerning rates of pay, rules, or working conditions which had not been decided by an appropriate adjustment board by which they were considered. The fifth annual report of the Board of Mediation covering the year July 1, 1930 to June 30, 1931, shows that in this period the board acted upon 54 cases involving rates of pay, rules and working conditions. Of these 54 cases, 24 were settled through mediation, 4 were submitted to arbitration, 12 were withdrawn through mediation, 6 were withdrawn during process of investi-

gation, 2 were withdrawn without mediation consideration, and 6 were retired without mediation proceedings by action of the board. At the end of the year one of the 4 cases submitted to arbitration during the year July 1, 1930, to June 30, 1931, had been concluded, and one case was withdrawn before the award was rendered. In the remaining 2 cases the interested parties had not met in an effort to agree upon the appointment of the remaining arbitrator or arbitrators. During this fiscal year the Board acted on 248 cases involving grievances or differences arising out of the interpretation or application of existing agreements concerning rates of pay, rules or working conditions. Of these 248 cases, 74 were settled through mediation, 113 were submitted to arbitration, 58 were withdrawn through mediation, 1 was withdrawn without mediation consideration, and 2 were closed without mediation proceedings by action of the Board. At the end of the year 10 of the 113 cases submitted to arbitration during the fiscal year had been concluded with 3 arbitration proceedings. In the remaining 103 cases which involve 3 arbitration proceedings, the interested parties had not met in an effort to agree upon the appointment of the remaining arbitrator or arbitrators, or were making an effort to otherwise dispose of their differences.

Emergency Board.—The fourth emergency board was appointed by the President, April 16, 1931, to investigate a dispute between the Louisiana & Arkansas Railway Co. and certain of its employees represented by the Railway Employees' Department of the American Federation of Labor, Federated Shop Crafts. The controversy which led to the appointment of the emergency board began with a communication submitted by the carrier to the shop-craft organization giving notice of its desire "to abrogate and revise the present schedule covering rates of pay and working conditions of the shop-craft employees." On Feb. 9, 1931, the carrier put into effect the pro-

posed changes in wages, a new schedule of rules, and a number of changes, some of them very important, of which there had been no previous notice. The board recommended that the carrier restore the standard rate of wages and rules governing working conditions prevailing on its lines when it first proposed changing them; and also recommended that if the opportunity is offered the carrier to mediate or arbitrate the controversy it should accept it, and if not presented it should seek it.

INDUSTRIAL MEDIATION

Federal.—The work of the Conciliation Service of the United States Department of Labor is that of mediation in labor disputes. It has been the general policy to respond promptly to any calls for the good offices of the representatives of the conciliation service from either the employers, employees, or from the public affected by any individual disputes. In the handling of trade disputes the representatives of the service cooperate freely with the state or local agencies or the community. The pre-figures for the year 1930-31 show about 626 cases reported to the service. About 547 cases affecting approximately 348,372 employees were adjusted by the service for the fiscal year ending June 30, 1931.

State.—The Industrial Commission of Colorado, created in 1915, is charged with certain duties as to arbitration and mediation. During 1931, 11 requests were received by the commission from employers for a reduction in the wages of their employees. These were denied by decision of the Commission. No requests by employees for an increase in wages were received by the Commission during 1931.

INDUSTRIAL ARBITRATION

Street-Railways.—An arbitration board in a wage controversy between the St. Louis Public Service Co. and its employees, members of Div. 788 of the Amalgamated Association of Street and Electric Railway Em-

CHILD LABOR

ployees, on Oct. 8, 1931, awarded a cut of 10 per cent in the wages of the employees. The majority of the board based their award on the financial condition of the company and the necessity of maintaining an uninterrupted transportation service. The minority member of the board filed a dissenting opinion saying in part "The men are receiving a bare minimum living wage and the company is in better financial condition than ever with greatly increased reserves and a very substantial sum of ready cash on hand. . . . I hold that a wage cut can not be logically justified at this time."

Dress Industry.—The industrial relations in the dress industry of New York City are governed by a 4-cornered set of agreements among the four factors comprising the industry, —manufacturers, jobbers, contractors, and labor, which were signed Feb. 12,

1930. While arbitration had been practiced in the dress industry for many years prior to 1930, there had been no permanent arbitrator, the parties agreeing upon an arbitrator for each case as it came up. The present agreements are the first to provide for a permanent, constantly functioning machinery. N. I. Stone was elected as impartial chairman and performed the duties as arbitrator from March, 1930, to July, 1931, during which period he rendered 177 decisions in which every provision of any importance in the four agreements had to be interpreted and enforced. Many of the grievances to be arbitrated occur over the violation of the provisions of the agreements dealing with the closed shop, the right of discharge, strikes or lockouts, the reorganization of the shops, or sending work to outside shops when the workers are not fully employed.

CHILD LABOR

BY COURTENAY DINWIDDIE

GENERAL SECRETARY, NATIONAL CHILD LABOR COMMITTEE

LEGISLATION

Alabama.—A law was passed in 1931 which will raise the educational requirements for children leaving school and obtaining permits to work from the sixth grade to the seventh after September, 1932, and to the eighth grade after September, 1934; the same law limits the hours and makes permits necessary for work outside of school hours. The Workmen's Compensation Law was amended to provide double compensation for minors injured while illegally employed.

North Carolina.—The 8-hour day and 48-hour week were extended to apply to all children under 16 years of age in the occupations covered by the Child Labor Law, except that boys over 14 who are supporting themselves or widowed mothers may be exempted; and the employment of children under 16 years was prohibited in specified dangerous occupa-

tions. Other enactments limit working hours for girls over 16 years of age and women in factories and mills to 11 hours a day and 55 hours a week, and prohibit night work between 9 p. m. and 6 a. m. for girls between 16 and 18 years.

Pennsylvania.—The education of migratory child workers was provided for and their employment prohibited at times when their attendance at school is required by the laws of their own state. The Workmen's Compensation Law was amended to provide double compensation for minors injured while illegally employed.

Texas.—The Workmen's Compensation Law was amended to bring children employed illegally within the regular compensation provisions.

New Jersey.—The educational requirement, for children 14 years of age leaving school for work, was raised from the sixth to the eighth grade.

Work Permits.—Child labor or work permit regulations were strengthened in various respects in Connecticut, Delaware, Maine, and Vermont.

Proposed Constitutional Amendment.—One state, Colorado, ratified the Amendment, being the sixth state to do so. Bills proposing ratification were introduced in New York, Ohio, Oregon, Pennsylvania, Washington, West Virginia, and Wyoming, but failed to pass.

Miscellaneous.—Many bills designed to weaken the standards of child labor legislation were introduced, and were defeated in practically every case. On the other hand, a number of bills of first importance failed to pass; among these were proposals to raise the minimum age for leaving school for work from 14 to 15 or 16 years of age in Illinois, Massachusetts, New York, Pennsylvania, Nevada, and Texas.

CONFERENCES AND RESOLUTIONS

White House Conference.—At the White House Conference on Child Health and Protection held Nov. 19-22, 1930, in Washington, reports on child labor in agriculture, child labor in non-agricultural occupations, hazardous occupations, industrial accidents and workmen's compensation for injured minors, and general problems of administration of laws affecting child labor, were presented by the Committee on Vocational Guidance and Child Labor, in the section on Education and Training. The recommendations made in the reports were adopted by the Conference and the reports themselves appear in the volume *Child Labor* in the White House Conference series. Various state and city conferences pursuant to the White House Conference, during the year, included in their plans consideration of child labor problems and in some cases had a speaker or special subcommittee report on child labor.

Migratory Child Labor.—The second Interstate Conference on Migratory Child Labor held in Baltimore in February adopted principles

for the regulation of the employment, education, and housing of migrant children. The Annual Conference of the National Child Labor Committee was held at Minneapolis, on June 16, the two sessions being devoted to the consideration of migratory child labor and the hazards of children in industry.

Night Work.—The Cotton Textile Institute recommended the elimination of night work in cotton mills between 7 p. m. and 6 a. m. for minors under 18 years of age and for women, and this recommendation was accepted and took effect March 1, 1931, by 83 per cent of the cotton textile industry.

Employment.—The Eastern Interstate Conference on Labor Legislation which met in June at the call of Governor Pinchot, representing ten eastern states, included a section on child employment which adopted resolutions similar to those of the White House Conference.

THE BACK-TO-SCHOOL MOVEMENT

In the field of child training and employment, the industrial depression and resultant economy programs threatened the maintenance of educational standards and facilities in many sections. On the other hand, increased school enrollment was reported throughout the country, due to scarcity of employment. The need became apparent for widespread readjustments in the educational system in order to give these children, especially the older boys and girls 16 and 17 years of age, training adapted to their wants. In spite of steady improvement in school attendance, there were 3,326,152 children 7 to 17 years of age, inclusive, who were not attending any school in 1930, according to the Census of the United States. In view of these facts, the National Child Labor Committee increasingly turned its attention to the task of keeping in school all children under 16 years of age and as many as possible of the older boys and girls, at the same time seeking the improvements in educational facilities and legislative regulations necessary to

place these gains on a basis of permanent value. The President's Emergency Committee on Unemployment urged that all children be kept in school up to 16 years of age at least, and the United States Children's Bureau, the National Education Association, the American Federation of Labor and various other national organizations took the same stand.

NEW INVESTIGATIONS

Street Trades.—Completed investigations of which no report was published during the year include a study of street trades in Detroit, made by the National Child Labor Committee, and a study of street trades in New York City made by the Children's Aid Society.

Pending Investigations.—The Federal Children's Bureau had the following investigations in progress:

(1) an analysis of workmen's compensation laws with reference to minors illegally employed and of the procedure followed by the states providing additional compensation for such minors, including special studies of procedure in Indiana and Wisconsin; (2) a study of statistics of industrial accidents to determine what occupations are particularly hazardous to minors and of existing laws and rulings excluding minors from dangerous occupations; (3) a study of the work histories of 1200 children of subnormal mentality in various cities; (4) reports on the work histories of boys and girls leaving school for work between the ages of 14 and 18 years in Milwaukee, Wisconsin, and in Utica and Rochester, New York.

Other investigations in progress included a study of the rehabilitation of minors suffering industrial injuries resulting in permanent handicaps, by the National Child Labor Committee; a study of the exposure of minors to poisons and dusts in hazardous amounts in the course of their work, by the United States Public Health Service; and a study of the exposure of minors to industrial poisons in the printing and other trades,

by the New York State Labor Department.

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The American Child, a monthly bulletin of general child welfare, National Child Labor Committee, New York.

Proceedings of the Twenty-Sixth Annual Conference of the National Child Labor Committee Held in Minneapolis, Minnesota, June 16, 1931.

Child Labor Yesterday and Today, including the Annual Report of the National Child Labor Committee for the year ended, Sept. 30, 1931.

Child Labor. Part II of the report of the Committee on Vocational Guidance and Child Labor. White House Conference (in press).

A Study of the Physical Examinations of Children Entering Industry, By Viola R. Anderson and Marion Nelson, National Tuberculosis Association, New York.

A Study of the Issuance of Employment Certificates, the Provision for Junior Placement, and the Procedure for Enforcing the Compulsory School Attendance Law in Illinois. Made for the Illinois Committee on Child Welfare Legislation, the Subcommittee on Health and Education, by Savilla Millis Simons.

Report of the Commission to Investigate the Employment of Migratory Children in the State of New Jersey. (Trenton).

Child Labor Legislation in New York State. By Mary Stevenson Callcott, The Macmillan Company.

A Study of the Ohio Compulsory Education and Child Labor Law. By Arch O. Heck, Ohio State University.

Administration of the Child Labor Law in Ohio, By Charles E. Gibbons and C. T. Stansbury, National Child Labor Committee, New York.

WORKMEN'S COMPENSATION AND INSURANCE

BY JOHN B. ANDREWS

SECRETARY, AMERICAN ASSOCIATION FOR LABOR LEGISLATION

LEGISLATION

A large volume of labor legislation was enacted in 1931, a substantial part of which related to administrative and procedural provisions of existing laws. Thirty-nine Workmen's Compensation Acts were amended. A number of states liberalized the medical benefits and increased the compensation awards for specific disabilities. The most notable improvements were made in Maryland, New York, North Carolina and Wisconsin. In addition, Alabama and Pennsylvania provided double compensation for minors injured while illegally employed, Delaware reduced the waiting period from fourteen to seven days and Missouri adopted an elective occupational disease clause. In Florida, for the first time, workmen's compensation received the approval of one branch of the legislature. A carefully considered bill passed the Senate but was defeated in the House by a close margin. Four states,—Arkansas, Florida, Mississippi and South Carolina—still remain without this modern protection for industrial accidents. In Mississippi and South Carolina, which meet in legislative session in 1932, effort will be continued to secure the adoption of this much needed legislation. The number of states with old age pension laws was increased to 17 by the enactment of new laws in five states,—Delaware, Idaho, New Hampshire, New Jersey and West Virginia.

WORKMEN'S COMPENSATION

Maryland.—The weekly maximum for total and temporary partial disability was increased from \$18 to \$20. The annual limit on administrative assessments was raised and the commission's authority over legal fees was extended. Procedure for reviewing awards was revised.

New York.—The time limit with-

in which disability may be reclassified was extended and the requirement that an occupational disease to be compensable, must have been contracted within twelve months previous to disability, was removed under certain conditions. Coverage was extended to private or domestic chauffeurs in New York City, and the Civil Service Law was amended to extend workmen's compensation benefits to civil employees.

North Carolina.—Provision was made for a second injury fund. The commission is now authorized to require the furnishing of all necessary medical care, and its authority to revise awards was extended. By separate enactment a Compensation Rating and Inspection Bureau to regulate insurance rates was created.

Wisconsin.—The waiting period was reduced from 7 to 3 days and the disability compensation rate was raised from 65 to 70 per cent of wages. This is the first American workmen's compensation law to provide for the payment of more than two thirds of wages. The law was made compulsory for employers hiring three or more workers and the minors' wage expectation provision was liberalized.

VOCATIONAL REHABILITATION

California, Illinois, Maine and New Mexico revised the administration of vocational rehabilitation and New Hampshire re-affirmed the acceptance of the Federal Rehabilitation Act and appropriated \$2,000. Congress extended the benefits of the act to Porto Rico which accepted the act and appropriated \$17,000 to match Federal funds. Only four states remain,—Delaware, Kansas, Vermont, and Washington—that have failed to enter into the cooperative educational plan for vocational retraining of their cripples.

WORKMEN'S COMPENSATION AND INSURANCE

OLD AGE PENSIONS

Amendments.—Laws already in effect were amended or supplemented in California, Colorado, Maryland, Massachusetts, Wisconsin and Wyoming. Commissions to study old age dependency were created in Illinois and Oregon. Constitutional amendments to permit old age pension legislation were advanced in Missouri and Pennsylvania.

Delaware.—A state-wide old age pension law was enacted to be administered by a newly created old-age welfare commission, empowered to appoint assistants and vested with necessary inquisitorial powers and authority to make rules for the administration of the act. Pensions not to exceed \$25 per month, or, with all other income, \$300 per year are payable to any qualified person over 65 who has resided in the United States for 15 years and in the state for 5 years. Funeral expenses, not exceeding \$100 may be allowed. Pension certificates must be renewed annually and may be cancelled in case of changed circumstances or discovery of fraud. Annual reports are required from the commission and annual appropriations of \$200,000 are made for two years beginning July 1, 1931.

Idaho.—A state-wide old age pension law was enacted to be financed entirely from county funds and administered by county commissions under the direction of the state department of public welfare. Pensions in an amount similar to those provided in Delaware are payable to qualified persons over 65 whose annual incomes do not exceed \$300 and who have no children or other persons legally responsible for their support, and who have been United States citizens for 15 years, state residents for 10 years immediately preceding the date of application. Funeral expenses not to exceed \$100 are allowed. Pension certificates must be renewed annually. County commissions must file annual reports with the state department of public welfare and administer the act subject to its regulations.

New Hampshire.—An old age pension law was enacted to be administered by county commissioners. Cities and towns must reimburse counties for pensions paid and for administrative expense. Pensions not to exceed \$7.50 per week, less income from any other source are payable to qualified persons at 70 who singly, or jointly with their spouses, possess not over \$2,000 property and who have resided in the United States for 15 years and in the county for 15 years immediately preceding application. Funeral expenses not to exceed \$125 are allowed. Commissioners are required to keep public records and to make annual reports.

New Jersey.—A state-wide old age pension law was enacted to be financed one-quarter by the counties and three-quarters by the state from proceeds of inheritance taxes. The act is to be administered by county welfare boards under the direction of a division of old age relief created in the state department of institutions and agencies. Pensions not to exceed \$1 per day are payable to qualified persons, 70 years or older, who do not possess property in excess of \$3,000 and who are United States citizens with 15 years' continuous state residence and one year's county residence. Funeral expenses are allowed if estate cannot defray the cost. Pensions must be renewed semiannually.

West Virginia.—County courts may establish old age pension systems after submitting the question to popular referendum. Funds are to be raised by direct levy, not to exceed five cents on every \$100 assessed valuation. Pensions not to exceed \$1 per day are payable to qualified persons who have attained the age of 65. Additional qualifications include 15 years' United States citizenship, 10 years' state and county residence immediately preceding the application. Administration is in the hands of the county courts with appeal to the circuit court. Complete records are required and county clerks are directed to do all necessary clerical work without additional compensation.

UNEMPLOYMENT RESERVES

Commissions.—The United States Senate created a special committee to study unemployment insurance, and in eight states,—California, Connecticut, Massachusetts, New York, Ohio, Oregon, Tennessee and Wisconsin—investigating commissions were authorized to study unemployment and the desirability of establishing unemployment reserves by law. The first of these to report, the Wisconsin commission, recommended compulsory unemployment reserves to be set aside by industry and urged action by the special session of the legislature, the Assembly of which had passed the official bill by a vote of 63 to 15 before the end of 1931.

California.—The legislature authorized the creation of a State Unemployment Commission of five members appointed by the Governor with an appropriation of \$50,000, authorized and directed to make surveys, studies and investigations of all problems relating to unemployment with a view to formulating such plans and recommending such legislation as will enable the state to take the proper steps toward the solution of such problems.

Connecticut.—The Connecticut Unemployment Commission, composed of 5 members appointed by the Governor with an appropriation of \$25,000, was authorized by the legislature. The commission is to investigate unemployment in order to discover means of alleviating it and to report prior to the 1933 legislative session with recommendations for remedial legislation.

Massachusetts.—A Special Commission on the Stabilization of Employment was authorized by the legislature consisting of 5 members appointed by the Governor with an appropriation of \$35,000. The commission is to collect and publish information on methods of regularization and stabilization of employment and make such other studies as may be helpful in promoting steadier employment. Final report must be made by Dec. 1, 1932.

New York.—A Joint Legislative Committee on Unemployment was authorized by the legislature composed of 5 assemblymen, 3 senators, and 3 citizen members representing labor, employers and the public with an appropriation of \$25,000. The committee was directed to investigate the causes of unemployment and make recommendations for such legislation as may be necessary to serve the best interests of all the people of the state. A report is to be made to the 1932 legislature.

Ohio.—A commission was authorized by the legislature to study the causes of unemployment and recommend the feasibility of mutual unemployment insurance as a remedy. The commission, composed of 9 members appointed by the Governor with an appropriation of \$15,000 is to investigate into the advisability of setting up unemployment reserves of insurance funds and to recommend what form of legislation may be wise or suitable to Ohio. The commission shall report not later than Jan. 1, 1933.

Oregon.—A commission of 3 citizens appointed by the Governor with an appropriation of \$1,500 was authorized by the legislature to study the subjects of old age pensions, old age insurance and unemployment insurance and to report at the next regular session of the legislature.

Tennessee.—The legislature authorized a committee of 10 members from the House and 3 from the Senate to serve during the recess of the legislature for the purpose of investigating the unemployment situation and report its findings to the legislature together with such recommendations as may be deemed proper.

Wisconsin.—The Legislative Interim Committee on Unemployment Insurance was authorized by the legislature consisting of 3 assemblymen, 2 senators and 2 citizens appointed by the Governor, to consider the advisability of the adoption of a system of unemployment insurance and to report at the special legislative session late in 1931.

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

(For further information, the reader may address the following organizations)

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DIVISION XVII

RELIGION AND RELIGIOUS ORGANIZATIONS

PROTESTANT DENOMINATIONAL ACTIVITIES

By HERMAN C. WEBER

EDITOR, *The Yearbook of the Churches*

GENERAL

A New Decade.—The year 1931 marks the beginning of a second decade after the World War. A recent study of the evangelistic records of the larger religious bodies in the United States suggests that there is an underlying twenty-year cycle in the last hundred years of denominational history with a minor cycle of about ten years. The course of organized religion can be plotted, if the suggestion is valid, by decades with some degree of assurance. There is some reason to believe that 1931 begins a decade with a profound change operating in the temper of Protestantism. The decade of the Twenties was characterized by inflation, grandiose plans in organized and coöperative religion and with an enormous expansion of plants and equipment. Side by side with this development came a flood of secularism, of moral collapse and of contempt for authority of all kinds,—national, moral, ecclesiastical and spiritual. The leadership of the Churches faltered. There were numerous controversies, lowered spiritual indices and, during the last part of the decade, some disintegrations in membership and benevolences. Political and economic currents have entered into a fellowship with a renaissance of spiritual desire to send the curve of the Church upward in strict accord with the course of past experience. The Churches, through their leadership and the general course of their respective methods of functioning, are becoming more vocal, more

self-conscious and more prophetic. The criticism which was showered upon the Church from outside itself immediately after the World War has subsided, and the criticism of the Church by its own prophets and from within is now the phenomenon of the Church-scene. From this process of self-appraisal, which characterized a majority of the important ecclesiastical representative gatherings of the year, a more effective religious influence may be expected to develop. It has, however, enormous national evils, contempt for law enforcement, widespread grafting and racketeering, gambling and self-indulgence and selfishness to combat.

Some Hopeful Indications.—The year recorded a distinct increase in communal observances of religious festivals. On mountains, in parks and in other public places, Christmas and Easter gatherings at unusual hours drew great crowds of people, and their arrangements were brought very successfully to distant millions of people by widespread radio hook-ups. Quite generally it was reported that congregations by and large were better than for many years, perhaps by as much as ten per cent. In the same way it was reported by several religious bodies that sacramental services had been on the whole unusually well attended. The situation among the young people of the churches and the students on the campus seemed to be greatly improved from the religious point of view. The interest in the broadcasting of religious services and addresses

PROTESTANT DENOMINATIONAL ACTIVITIES

was believed to be far greater and led to the enlargement of the broadcast hours devoted to this feature and to the more careful development of the control and embellishment of them. Several denominations have shown signs of a returning productivity in new members and in many religious bodies, as will be seen in a careful perusal of the very brief notes which follow, special emphasis has been proposed on spiritual progress. It may well be that the great interest in organizational adjustments or devices so characteristic of the last decade will give place to spiritual movements and ambitions for the new decade.

Books and Thinking.—The conflict in the intellectual area with cynicism, mechanism and stark materialism has been evoking a better quality of intellectual leadership in thought

which is beginning to show itself in books, periodicals, and in other writing. Some very fine studies in denominational backgrounds are being made and published, and notable contributions to the understanding of the social and economic whys and wherefores of current church movements are appearing. A glance into the preoccupations of Protestant thinking is permitted by the list of volumes approved for first choice for the Religious Book Club. One of these books is by a Jewish rabbi but is admitted to distinction in this Club by a Protestant committee, composed of S. Parkes Cadman, Harry Emerson Fosdick, Francis J. McConnell, Charles Clayton Morrison, Howard Chandler Robbins and Mary E. Woolley. The list for 1931, one choice per month, follows:

Month	Title	Author
January	<i>Religion in a Changing World</i>	Abba Hillel Silver
February	<i>Which Way Religion?</i>	Harry F. Ward
March	<i>Body, Mind and Spirit</i>	Elwood Worcester and Samuel McComb
April	<i>The Kingdom of God in the New Testament</i>	Ernest F. Scott
May	<i>The Recovery of Worship</i>	George Walter Fiske
June	<i>A Psychological Approach to Theology</i>	Walter Marshall Horton
July	<i>The Growth of the Idea of God</i>	Shailer Mathews
August	<i>The Religion of Jesus and Love, the Law of Life</i>	Toyohiko Kagawa
September	<i>Pathways to the Reality of God</i>	Rufus M. Jones
October	<i>Jesus and the Gospel of Love</i>	Charles E. Raven
November	<i>Jesus Came Preaching</i>	George A. Buttrick
December	<i>The Mysticism of St. Paul</i>	Albert Schweitzer

CURRENT STATISTICS

Tabulation.—Each spring the *Christian Herald* collects the reports of church membership from the religious bodies in the United States and tabulates them by groups and as separate religious bodies. This reporting was begun in 1916, and has been annually in the capable hands of the Rev. H. K. Carroll, D.D. After Dr. Carroll's death the Rev. G. L. Kieffer, D.D., Litt.D., became the statistical editor of the *Herald* and completed the unfinished task of Dr. Carroll for the 1931 report. This was published in the May number. Dr. Kieffer is the able statistician of the National Lutheran Council. The collection of figures from the two hundred and more religious bodies included in the enumeration of the census bureau presents very great difficulties. The definition of "member-

ship" varies greatly. The ecclesiastical years are diverse. There is a disposition in some bodies to refuse or to approximate statistics. The tabulations, therefore, cannot be pressed too far. They are suggestive rather than decisive as a whole.

Church Membership Statistics.—The churches tabulated by Dr. Kieffer showed an increase over the previous record, printed in 1930, of 88,350 reported members. The grand total of "communicants" reported was 50,037,245. This was approximately for 1930. In this total, however, were incorporated figures for 1929, the latest available for some bodies, and even figures for 1926, available for some bodies only from the census enumeration. The 1929 report was corrected by Dr. Kieffer and serves as a base from which to figure increase. The corrections placed the 1929 member-

XVII. RELIGION AND RELIGIOUS ORGANIZATIONS

ship at 49,948,895. The increase percentage was 0.17 as compared with the estimated population increase of 1.5 per cent. Several of the larger bodies recorded a general movement in their churches to cross indifferent or lost members off their active rolls. This was notably the case with the Presbyterian, U. S. A., and the Methodist Episcopal communions. The Presbyterians placed 72,983 names on the "suspended roll" while they received 66,279 on confession. The Methodists reported that their list of "non-resident inactive members" had grown to about half a million. Whether this movement represented a facing of a serious disintegrating process in organized religion, a confession that as many, if not more, people were disappearing out of the back doors of the churches as were entering in the front doors, or whether this movement was a really healthy step toward stripping off a false statistical front and toward a tightening up of

church membership responsibilities, remained an open question.

Tables of Membership.—The *Christian Herald* figures cover over two hundred religious bodies, the number of which are very small numerically, though for other reasons they may be very significant. In the table below only the religious bodies with more than 100,000 reported members, whatever may be the definition of membership, are included. The Roman Catholic "population" is used with a deduction of 15 per cent to obtain "communicants". The proportion of children in the figures reported varies greatly in the different bodies. Those interested will find a check on this proportion in the 1926 census figures published in 1930 by the Department of Commerce with the title *Religious Bodies, 1926*. The table includes the figures of 36 bodies whose membership as reported covers about 96 per cent of the grand total of 50,037,245.

TABLE OF CHURCH MEMBERSHIP

(Approximately for 1930)

RELIGIOUS BODIES WITH MORE THAN 100,000 REPORTED MEMBERS

(The definition of membership variable)

1. Religious Bodies Showing Gains

Religious Bodies	Reported Membership	Increase	Percentage
1. Assemblies of God.....	107,641	15,660	17.0
2. Seventh Day Adventists.....	123,169	3,326	2.7
3. Evangelical Synod of N. A.....	257,724	6,022	2.3
4. United Lutheran Church.....	945,956	21,563	2.3
5. Baptist: Southern Convention.....	3,840,020	69,375	1.8
6. American Lutheran Conference.....	923,544	14,289	1.5
7. Lutheran Synodical Conference.....	852,726	12,102	1.4
8. Protestant Episcopal Church.....	1,254,227	16,532	1.3
9. African M. E. Church.....	790,000	8,308	1.0
10. Evangelical Church.....	215,080	2,194	1.0
11. Methodist Episcopal, South.....	2,608,496	14,458	0.5
12. United Brethren.....	401,228	2,155	0.5
13. Presbyterian Church in U. S.....	457,855	1,867	0.4
14. Baptist: Northern Convention.....	1,410,325	5,640	0.4
15. Congregational Churches.....	940,802	1,672	0.1
16. Primitive Baptists.....	102,975	156	0.1
17. Roman Catholic Church.....	17,192,123	18,976	0.1

2. Religious Bodies Showing Decreases

Religious Bodies	Reported Membership	Decrease	Percentage
1. Reformed Church in America.....	159,325	337	0.2
2. Christian Church.....	107,479	919	0.8
3. United Presbyterian Church.....	176,126	2,005	1.1
4. Presbyterian Church in U. S. A.....	1,936,866	22,140	1.1
5. Methodist Episcopal Church.....	4,537,769	51,895	1.1
6. Disciples of Christ.....	1,554,678	18,567	1.1
7. Reformed Church in U. S.....	349,506	5,587	1.5
8. Colored Methodist Episcopal.....	338,771	9,140	2.6
9. Methodist Protestant Church.....	190,000	5,460	2.7
10. Russian Orthodox.....	150,000	32,000	17.5

Note: These Bodies are arranged in the order of their percentages of increase or decrease.

PROTESTANT DENOMINATIONAL ACTIVITIES

3. Religious Bodies Not Reported

Religious Bodies

1. Baptist: National Convention.....	
2. Latter-day Saints.....	
3. African M. E. Zion Church.....	
4. Churches of Christ.....	
5. Greek Orthodox (Hellenic).....	
6. Conservative Brethren.....	
7. Baptist: American Convention.....	
8. Serbian Orthodox.....	
9. Jewish Congregations.....	

Reported Membership in 1929

3,515,542
596,108
500,000
433,714
289,000
134,620
117,858
100,000
357,135

Summaries.—In the above table the total membership of the seven-teen communions showing increases is 32,423,891, and their net increase is 214,295. The membership of ten communions showing decreases is 9,500,-500, with a decrease of 148,050 and the communions not providing a report count 6,042,977 members. The Polish National Catholic Church, which was included a year ago in the list of religious bodies with 100,000 members each, reported less than that number. Two other bodies, the Assemblies of God, a recent organization established in Arkansas and Missouri in 1914, and the Primitive Baptists, an outgrowth of the "anti-mission movement" among the Baptist bodies, reported more than 100,000 members for the first time. The membership credited to "Jewish congregations" is taken from the census enumeration.

The *Jewish Year Book*, 1930, reported the communal organization of the Jews in the United States as "Number of Jews, 4,077,042."

Later Statistics.—Each year the United Stewardship Council, on which all the major Protestant bodies are represented, collects and publishes the giving statistics of the larger bodies. Those whose latest figures had been received by Dec. 1, are provided by the courtesy of Harry S. Myers, D.D., Secretary. The date of the end of the church-year which is reported is included. The first table displays membership reports with the percentage of increase as calculated on the basis of the United Stewardship Council report of 1930. The second table, of total giving to all purposes, permits a study of 15 bodies with reference to the effect the depression-period in its first stage has had.

TABLE OF MEMBERSHIP

(Alphabetical Arrangement)

Body	Date of Report	Membership	Increase
American Lutheran Conference.....	Dec. 31, 1930	947,951	2.3
Baptist: Northern Convention.....	Apr. 30, 1931	1,438,739	2.4
Congregational Churches.....	Dec. 31, 1930	943,569	0.2
Evangelical Church.....	Sept. 30, 1930	225,369	0.8
Evangelical Synod of N. A.....	Jan. 31, 1931	255,337	1.1 ¹
Lutheran Synodical Conference.....	Dec. 31, 1930	883,258	1.1
Methodist Episcopal.....	May 31, 1930	3,938,316	0.6 ¹
Methodist Episcopal, South.....	Dec. 31, 1930	2,616,497	0.5
Presbyterian in the U. S. A.....	Mar. 31, 1931	1,949,747	0.6
Presbyterian in the U. S. S.....	Mar. 31, 1931	462,299	0.9
Protestant Episcopal.....	Dec. 31, 1930	1,287,431	3.8
Reformed in America.....	Apr. 30, 1931	159,030	0.2 ¹
Reformed in the U. S.....	Dec. 31, 1930	347,690	0.5 ¹
United Lutheran.....	Dec. 31, 1930	987,231	1.6
United Presbyterian.....	Mar. 31, 1931	176,666	0.3

¹ Decrease.

TABLE OF CONTRIBUTIONS

Body	Total Giving	Decrease
American Lutheran Conference.....	\$17,627,121	4.2
Baptist: Northern Convention.....	33,289,670	2.1 ¹
Congregational Churches.....	24,238,201	5.4
Evangelical Church.....	6,027,032	8.8
Evangelical Synod of N. A.....	6,308,322	0.2
Lutheran Synodical Conference.....	17,411,693	2.8
Methodist Episcopal.....	93,680,933	0.4

¹ Increase.

XVII. RELIGION AND RELIGIOUS ORGANIZATIONS

Methodist Episcopal, South.....	38,504,117	13.7
Presbyterian in the U. S. A.....	59,274,016	8.3
Presbyterian in the U. S.....	12,973,107	9.3
Protestant Episcopal.....	45,944,896	8.3
Reformed in America.....	5,191,763	3.5
Reformed in the U. S.....	6,395,478	5.3
United Lutheran.....	20,449,464	7.9
United Presbyterian.....	5,892,484	7.1

The partial list of leading religious bodies tabulated above presents a total of giving to all reported purposes of \$393,208,297. The same bodies reported a total of \$416,083,940 for their preceding year. The decline in reported giving was nearly \$23,000,000 but this was a decline of only 5.4 per cent. The indications were that the decline in total contributions for the years ending in December, 1931, or March, etc., 1932, would be more serious.

THE BAPTISTS

Northern Baptist Convention.—

The Baptist churches of the Northern States met in convention at Kansas City, Mo., June 3, 1931. The unified budget for benevolences was reported raised to 93.3 per cent of the previous year. A spirit of optimism pervaded the gathering. The Home Mission Society celebrated its centenary. The program for the convention was built around the subject, "Christians in a Changing World." Forum periods were provided in the sessions which gave the floor a great opportunity. Mattison B. Jones, of Los Angeles, Calif., a lawyer, was elected moderator for the year. Arrangements were made for him to itinerate, not only through the churches of the Northern Baptist Convention, but through the territory of the Southern Convention also. In exchange, President W. J. McGlothlin of Furman University, Moderator of the Southern Convention, was to itinerate through Northern territory. Other direct relations between these two conventions were proposed, and a suggestion that both conventions should meet in Washington, D. C., in 1933, was favorably received. In celebration of the centenary of Home Missions, a covered wagon left Brockton, Mass., July 20, stopped at many historical Baptist shrines, proceeded across the conti-

nent, arriving safely at Portland, Ore. A delegation of speakers accompanied the wagon, and special meetings of Baptists were addressed at many points.

THE UNITED BRETHREN IN CHRIST

In the Church of the United Brethren in Christ there was manifest in all annual conference meetings and in area meetings during 1931, a deeper interest in securing for every member of the church a richer spiritual life and larger fellowship in the work, not only of this communion but in all phases of kingdom work. Statistics revealed an increased attendance in the Sunday schools of the denomination, and a net increase of approximately 3,000 in church membership. In all the meetings of the year clear strong emphasis was put on law enforcement and world peace based upon the Kellogg Pact to outlaw war. In spite of adverse financial conditions about one-third of the churches of the denomination contributed more largely for the support of missions and other benevolence causes the past year than formerly.

CONGREGATIONAL AND CHRISTIAN CHURCHES

The Congregational and Christian Communion.—Since 1925 the National Council of Congregational Churches has been discussing possibilities of union with the General Convention of the Christian Church. The first Congregational Church in America was formed in 1629 at Salem, Mass. The Christian Church was established in 1792 when James O'Kelly led a group of remonstrants out of the Methodist Church, using the name Republican Methodist at first. Baptist and Presbyterian elements were received later. The final merging of these two bodies took place in

PROTESTANT DENOMINATIONAL ACTIVITIES

1931 at the General Council meeting of the Congregational and Christian Churches at Seattle, Wash., June 25

Congregational Members.....	943,569
Churches.....	5,381
S. S. Members.....	709,639
Home Expenses.....	\$20,186,066
Benevolences.....	\$4,052,135

to July 3. The formal day of union was June 28, 1931. The numbers involved were:

Christian Members.....	108,453
Churches.....	1,137
S. S. Members.....	80,851
Home Expenses.....	\$1,048,434
Benevolences.....	\$142,940

Two co-moderators, one from each body, were chosen to serve for two years.

Seminar Topics.—The Council at Seattle was organized on a seminar basis, with daily two-hour sessions, on the topics, The Gospel and (1) the individual; (2) the family and youth; (3) the church; (4) the community; (5) national life; (6) international life. After five days of study each seminar presented its findings to the Council as a whole. One seminar recommended an endorsement of the majority birth-control statement issued by a Federal Council Committee as well as the adoption of a statement of its own, reading in part as follows: "We believe in the ideal of Marriage as the complete union of one man and woman, who, forsaking all others give themselves wholly unto each other. This ideal, we are convinced, cannot be realized without mutuality and freedom resulting from physical and spiritual oneness. We believe in the right of children to be wanted and the right of husband and wives to assume parenthood. Therefore, we favor the principle of voluntary child-bearing, believing that it sacramentalizes physical union and safeguards the well-being of the family and society."

Peace and Other Resolutions.—A Committee was created by the General Council of the Congregational and Christian Churches on Disarmament and World Peace to mobilize the sentiment and influence of the churches in order that they may "help to overcome the well-organized and highly financed influence of the militaristic caste and armament manufacturers." The Rev. Theodore A. Greene of New Britain, Conn., is the Chairman of this Committee. The General Council also adopted a recommendation that in the call to min-

isters, a sufficient absence with pay be given each year or at least once in two years to permit pastors to do advanced educational work along the lines of divinity, advanced social science, and church management. A resolution was also passed pleading with the Supreme Court for a rehearing of the Mackintosh case. It also took advanced stands on enforcement of prohibition laws, education for the same, against military training, entrance into the Permanent Court of International Justice, the drastic reduction of every kind of armament on land, sea and air, and modification of the name and purpose of the War and Navy Departments. After considerable debate, including a strong speech in favor of ratification by Col. Raymond Robbins of New York, it was resolved that the General Council respectfully urge upon the government the recognition of the Soviet Union.

THE DISCIPLES OF CHRIST

Indianapolis Conferences.—This Body with its headquarters in Indianapolis reported 218 one-day conferences held in November and attended by 60,000 people. These meetings were built around the theme "Our Message Is Jesus Christ" and were conducted by the United Christian Missionary Society. An outstanding accomplishment of the year was the establishment of a Pension Fund for the ministry. During the year, 2083 churches and organizations entered this plan, paying 8 per cent of ministers' salaries, and 2200 ministers, paying 2½ per cent.

Annual Convention.—The annual convention of this Body was held at Wichita, Kan., Oct. 6-11. The convention adopted strong resolutions on world peace, calling on the Senate to ratify the World Court Protocol as

quickly as possible after convening; urged the President to present the Pan-American Arbitration Treaties to the Senate for ratification; urged recognition of the Kellogg-Briand Pact for the renunciation of war as a basis for negotiations at the Disarmament Conference next February, and a courageous and far-reaching offer for disarmament; expressed profound disapproval of the proposal to spend \$750,000,000 in naval construction; suggested the elimination of the reserve officers training corps from colleges and high schools except those required by law to maintain such units, and that in these the courses be made elective rather than required. The Convention also respectfully requested the Supreme Court of the United States to reopen the Douglas Mackintosh case on the ground that the implications of citizenship involved in the decision do violence to the deepest religious convictions. A strong resolution on National Prohibition confirmed its belief that prohibition is an issue superior to partisan politics and suggested to prohibitionists the nomination of dry candidates on all tickets, and condemned the efforts to legalize the manufacture and sale of beer with alcoholic content stronger than permitted under the Volstead Act.

THE PROTESTANT EPISCOPAL CHURCH

General Convention at Denver.—The Protestant Episcopal Church recorded an interesting percentage of growth for the year, 1930, according to the latest figures available. Its General Convention, meeting triennially, was held in Denver, Sept. 16-30, 1931. One of the outstanding points of the Convention was the marked determination to apply the religion of Jesus Christ to social, economic and international problems of the day. It adopted resolutions advising the Senate of its opinion that the United States should become a member of the International Court of Justice without delay, that there should be an immediate substantial reduction of armament of all nations of the world at the Disarmament Conference of

February, 1932. It also expressed its hope that the naturalization laws and the oath of allegiance to the United States might be so modified that conscientious objectors might be admitted to citizenship, provided that they were willing to serve their country in the event of war by non-combatant service. It also passed strong resolutions concerning the illicit narcotic drug traffic. It advised Federal supervision of motion pictures and recorded its protest against all pictures which depict criminal or salacious subject matter.

Debate On Marriage.—A proposal came to the General Convention for the change of the Canon Law concerning Holy Matrimony. The debate on this subject attracted wide attention. After protracted discussion, the Canon (43) was amended. The Canon was not held to apply to the innocent party in a divorce for adultery. But Section VI made provision for any persons whose marriage had been annulled or dissolved by a civil court to appeal to a Bishop or the ecclesiastical court of a diocese or missionary district to have the said marriage declared null and void by the ecclesiastical authorities. The following impediments to marriage were listed:

- (1) Consanguinity;
- (2) Lack of consent of either party;
- (3) Mistake of identity of either party;
- (4) Mental deficiency of either party sufficient to prevent the exercise of intelligent choice;
- (5) Insanity of either party;
- (6) Failure of either party to have reached the age of puberty;
- (7) Impotence of either party undisclosed to the other party;
- (8) The existence of venereal disease in either party;
- (9) Facts which would make the proposed marriage bigamous.

THE EVANGELICAL CHURCH

Membership.—This Body reports a church membership of 225,369 with an enrollment in its Sunday schools of 318,823. Its organized congregations numbered 2075. During the

year the Church changed the name of ministers having charge of annual conference territories or a portion of same, from presiding elder to superintendent, and also made arrangements that bishops reaching the age of 72 years could not be reelected to the usual term of four years.

The Evangelical Synod of North America.—This is a Missouri corporation with 1260 congregations and a membership of 255,337. Its General Conference meets every four years, the next meeting being scheduled for 1933. The denomination held a nation-wide Sunday school convention June 24-28 at Evansville, Ind., under the direction of its Board of Religious Education. The outstanding event of the year was the dedication of the new Evangelical Synod Building at 1720 Chouteau Avenue, St. Louis, housing the publishing house and administrative offices of the denomination.

THE LUTHERANS

New Groupings.—In 1930, a merger of three important synods (Joint Ohio, Iowa and Buffalo) into the American Lutheran Church took place. This was followed by another federating movement, the merging of the American Lutheran Church, the Augustana Synod, the Norwegian Lutheran Church, the Lutheran Free Church, and the United Danish Church, into the American Lutheran Conference. Lutheran Synods are now gathered into three main groupings, the United Lutheran Church, with 945,956 communicant members, the American Lutheran Conference with 923,544, and the Lutheran Synodical Conference with 852,726. All of the Synods reported distinct membership gains. Emphasis was placed on personal evangelism, especially by the Luther League whose work is believed to have been a factor in the increase in membership of the Lutheran Church. In the American Lutheran Church group organization proceeded and various boards started to function. An outstanding event in the Norwegian Lutheran Church was a convention of the Young People's Luther League and Choral Union

which brought 15,000 people together in the stadium at Chicago. A nationwide campaign against modernism was inaugurated by the American Lutheran Publicity Bureau. Great success was reported to have attended the various widespread broadcasts under the auspices of various organizations. Especially significant was the work of Rev. F. H. Knubel, D.D., President of the United Lutheran Church, on the National Broadcasting System.

THE METHODISTS

Ecumenical Methodism.—The Methodists have held five international gatherings to which they give the name Ecumenical Conference. The last was held in London in 1911. The sixth convened, after several years of anxious preparation, in Atlanta, Ga., on Oct. 16. Authorized delegates from the Eastern and Western groups of churches numbered 550, but visitors from abroad as well as from American centers crowded the sessions to overflowing. The addresses were of the highest order in most cases. Great outbursts greeted discussions of unification, prohibition, peace, a Christian social order and disarmament. Especially important addresses were made by Bishop John M. Moore, of the M. E. Church, South, E. Aldom French of England, Dr. F. H. Otto Melle of Germany, Frank Kingdon, Daniel L. Marsh, E. C. Urwin, Thomas Liplady, James Endicott and Bishop F. J. McConnell. President Hoover and Vice-President Curtis also addressed the Conference, the President by radio and the Vice-President in person.

The Methodist Episcopal Church.—The General Conference of this Body meets quadrennially, the next meeting occurring in 1932. No ecclesiastical decisions or activities are to be noted for 1931. The close of the year (Oct. 31) for the boards of the Church coöperating in the World Service, brought in receipts of \$5,848,586 or \$1,162,397 less than in 1930. Contrasted with this serious curtailment (16.5%) were indications that the total contributions of the denomination might be equal or possibly

XVII. RELIGION AND RELIGIOUS ORGANIZATIONS

slightly in advance of the previous year. The outstanding event of the year was a study conference held at Delaware, O., from June 24 to July 3. It was built around the topic, "Christ in the Modern World." Some three hundred ministers, a few laymen and some carefully selected guests from other religious bodies met for a ten-day conference under very informal conditions. The gathering was preponderantly liberal in its views and might even be called radical by some. Preliminary studies had been made by various groups over a period of two years. Bishop Francis J. McConnell was Chairman, and Dr. R. E. Diffendorfer was Secretary of the Conference. The conclusions of the conference were printed and are available for study. Proposals were made for another conference of this type to be held in 1934. The reports were made in three groups. Group one, on "The Effects of Modern World Trends on Human Life" contained five,—Modern Business and Industry, Race Consciousness and Nationalism, The Changing Standards of the Family, The Secularization of Life, and The Penetration of Modern Trends Among All Races and Peoples. Group two, on "The Christian Message for the Modern World," contained five also,—The Christian Conception of Personality, The Christian Conception of God, Jesus Christ the Dynamic of Life, The Validity and Value of Christian Experience, and Christian Ethics and Society. In the third group, there were four reports on "The Christian Approach to the Modern World,"—The Church, a Christian Fellowship, Christian Education, Evangelism, and Missionary Motivation.

The Methodist Protestant Church.—Negotiations proceeded during the year for a union between the Methodist Protestant Church and the Methodist Episcopal Church. The separation of these two bodies occurred about 1827. Proposals for a standard hymn book to be used jointly by this Body, the Methodist Episcopal Church and the Methodist Episcopal Church, South, have been

favorably acted upon. No ecclesiastical decisions have been recorded for the year inasmuch as the conference of this Communion is held quadrennially. The outstanding event was a convention held at Washington, D. C., beginning May 12, 1931, which was attended by 2600 registered delegates and brought together in public meeting more Methodist Protestants than had ever been assembled at one place at one time in the denomination's history. Special emphasis was pressed upon evangelism and upon religious education as complementary to evangelism.

THE PRESBYTERIANS

The Presbyterian Church, U. S. A.—This is the largest Body of Presbyterians in the world, with its denominational headquarters in Philadelphia. Its annual General Assembly was held in Pittsburgh May 28 to June 3. Rev. Lewis Seymour Mudge, LL.D., was elected Moderator in recognition of his eminent services as Stated Clerk of the Assembly. The recent Assemblies of this Body have been characterized by debates on important issues, but this Assembly faced no critical decisions.

Birth Control.—A Commission on Marriage, Divorce and Remarriage was scheduled to present the second and final report, which, in its preliminary form, contained a paragraph on birth control. This provoked so much discussion in the denominational papers and dissension as well, that the Committee recast its report before its final submission, and the expected controversial discussion was completely avoided. The final report discussed marriage and related matters in detail and was approved and adopted by the Assembly. Another crisis arose over the Federal Council Committee report on the same subject. An effort was made to force withdrawal of the denomination from the Federal Council. Inasmuch as the Federal Council receives support from the official budget, the attack was made by a resolution withdrawing budget support, and a study of the Federal Council's action was re-

quired of the General Council of the Assembly. This study was made, and the committee unanimously reported a recommendation to continue action with the Federal Council together with budget support, and this recommendation was adopted by the Assembly.

War and Militarism.—Resolutions concerning an intelligent Christian social-mindedness strongly urged the entrance of the United States into the World Court, and refused to approve an overture from one presbytery asking a curb on the discussion of social conditions and institutions by Board representatives. They expressed the conviction that all representatives and all ministers be permitted to discuss, without any ecclesiastical interference or control, the question of militarism and the application of the Gospel of Jesus to all social institutions. They also ordered the Board of Christian Education to take such action as might be necessary to establish the status of a Presbyterian who had conscientious objections to war as being the same as that of the Society of Friends.

Spiritual Conditions.—The General Council of the Church was directed to make every effort to improve the spiritual condition of the churches. In pursuance of this plan under direction of the Secretary of the General Council, the Reverend C. Franklin Ward, D.D., five regional conferences, eight synodical and one hundred forty-four presbyterial group conferences were set up during the autumn with unusually fine leadership and very deep spiritual responses.

Member Canvass.—An effort was encouraged by the General Council in 1929-30 to develop greater efficiency in the every member canvass, and in March, 1931, over 5000 canvass directors in individual churches had been registered and 400 conferences in as many centers had been set up for their training. The effect of this emphasis on proper canvasses was discoverable in the pay-up for the year ending March 31. Thirty-six per cent of the churches in the denomination reported increases in their benevolence giving in spite of the hard

times, and the reports from various parts of the Church indicated that the subscriptions in the canvass had been unusually good.

Union Conferences.—During the year the proposed union with the Reformed Church in America and the Presbyterian Church, U. S., was interrupted, but conferences continued with the United Presbyterian Church and agreement was reached by the conferees on proposals to be submitted to the 1932 Assemblies of these two bodies.

Social Questions.—In response to public interest in the relation of various communions to social questions, brought into prominence by the hardships of the year, a pamphlet containing the various actions of the General Assembly with reference to social conditions was published in the fall and attracted wide attention.

Presbyterian United States (South).—This division of the Presbyterian Communion covers the territory commonly known as the Southern States. It reported 462,299 members. Ruling Elder R. A. Dunn, LL.D., of Charlotte, N. C., was elected Moderator at the meeting of the General Assembly held at Montreal, beginning May 28, 1931. The proposals for union with the Presbyterian Church, U. S. A., and other Presbyterian and Reformed bodies, were presented at this meeting and decision was reached to proceed no further with them. An attack was made on the relationship of this Body with the Federal Council because of the birth control report issued in the spring. The Assembly voted to discontinue its connection with and support of the Federal Council. This Body supports 420 missionaries in Africa, Brazil, China, Japan, Korea and Mexico.

The United Presbyterian Church.—The 73d General Assembly of the United Presbyterian Church was held at Youngstown, O., May 27 to June 2, 1931. The president of Muskingum College, Dr. J. Knox Montgomery, was elected moderator. An outstanding action of the Assembly was the naming of a special Spiritual Life Committee with injunctions to ar-

range a program for the intensive cultivation of spiritual and evangelistic effort. Lively sessions were reported on the matter of church union and relations with the Federal Council of Churches of Christ. Minorities debated heatedly against committee proposals. An overwhelming vote, however, ordered the Committee on Union to prepare a basis of organic union complete in all its details, to be submitted to the next Assembly, provided such action was also taken by one of the other members of the Presbyterian family. Relations with the Federal Council were continued though its support was cut and its recent pronouncements sharply criticized.

THE REFORMED CHURCHES

Reformed Church in America.—

The Board of Domestic Missions of this Body observed its centennial during the year. It was authorized to seek a centennial fund of \$100,000 from the churches. In spite of poor business conditions, \$80,000 was contributed. During this year the Board of Foreign Missions began its centennial year and was also authorized to ask for \$100,000 to be used for urgent needs in its foreign fields. For the past three years the membership of this Body has remained almost stationary, just short of 160,000 members. This static condition has been occasioned by many churches revising their rolls and dropping absentees. To meet this condition a constitutional amendment is being considered regarding the proper method for removing delinquent members. Changes in liturgical forms are also being considered to be reported at the next Synod. The General Synod met in June, 1931. It deferred further advance towards union with the Presbyterian Bodies which has been under discussion for some time. Its Committee for Conference on Union was reduced but continued. The Synod felt compelled to call attention to the unusually large number of available men for the pastorate and suggested that care be taken in selecting candidates for the ministry in order to obtain the most promising and those

appearing to be best equipped for this most exacting calling. The next Synod is to meet in the historic First Church in Kingston, N. Y., in June, 1932, in commemoration of Washington's Bi-centenary. The General was an attendant at this church during the Revolution.

The Reformed Church in the United States.—The outstanding event of the year in this Communion was the Convention of Reformed Churchmen held at Harrisburg, Nov. 10-12, 1931. Dr. Wm. E. Lampe was Chairman of the Convention Committee. Open forums were conducted at some of the sessions and outstanding speakers were heard. Bishop F. J. McConnell, President, Federal Council of Churches; Dr. John R. Mott, Dr. James Endicott of the United Church of Canada, Dr. David J. McConaughy, President of the United Stewardship Council, and Frederick J. Libby, of the National Council for the Prevention of War, were heard, together with outstanding speakers in the Reformed Church. On Oct. 11, the 400th anniversary of the death of Zwingli, founder of the Reformed Church, was observed and aroused great interest. During the year stewardship was stressed throughout this Body with an intensive period of cultivation through January, February and March. The meetings of the General Synod of this Church are held triennially, no meeting being scheduled for 1931. A strong program for Spiritual Emphasis was inaugurated during the year and will continue through the Lenten season of 1932.

DEATH OF DR. H. K. CARROLL

The former contributor of this section, Henry King Carroll, died at North Plainfield, N. J., Jan. 21, 1931. He was a distinguished Methodist layman who became a local preacher and was ordained an elder in his Church. He held important posts in the Federal Service, serving as U. S. Commissioner to Porto Rico from 1898 to 1900 and as director of the religious census from 1890 to 1903. He also served his denomination as corresponding secretary of its Foreign

INTERDENOMINATIONAL ACTIVITIES

Missions Board and as secretary of the Western section of the Methodist Ecumenical Conference. He was president of the New York Methodist Historical Society. Dr. Carroll's great fame came from his statistical work in connection with the census and as

editor of the *Christian Herald*. For this journal he compiled an annual digest of the statistics of church membership which commanded wide attention in the secular as well as the religious press and was accepted as authoritative.

INTERDENOMINATIONAL ACTIVITIES

By SAMUEL McCREA CAVERT

FEDERAL COUNCIL OF CHURCHES OF CHRIST IN AMERICA

FOREIGN MISSIONS

India.—The year 1931 was characterized by a widespread interest in studying, surveying, and appraising various phases of foreign missionary effort. No fewer than five inquiries have been under way in this general area of interest. The Commission on Christian Higher Education in India, appointed by the International Missionary Council, brought out its report, a volume of four hundred pages, in September. The Commission had as its chairman an English educator, A. D. Lindsay, Master of Balliol. The American members of the Committee were Professor William Adams Brown of the Union Theological Seminary, and President William J. Hutchins of Berea College. Professor Oscar M. Buck of Drew Theological Seminary served as the Secretary of the Commission. The Indian members served upon the body on an equal basis with the English and American members. The report of this international Commission surveys the history of Christian Higher Education in Indian and the social, economic and political factors that are affecting it today. The report proposes two new important functions for the Indian colleges, those of extension and research, the purpose in connection with both functions being to relate the colleges more directly to the service of the Christian movement as a whole. As a means of carrying out the functions of extension and research, strong emphasis is laid upon the development of cooperation among the various colleges.

Japan, China and Philippines.—

A similar commission was in Japan during the latter part of 1931 studying Christian higher education in that country. The chairman of the group was Frank W. Padelford, executive secretary of the Baptist Board of Education. The other American members were President G. Bromley Oxnam of De Pauw University, Miss Ruth F. Woodsmall of the National Board of the Young Women's Christian Association and Edward Rynearson, director of vocational guidance of the Fifth Avenue High School, Pittsburgh. A visitation of China, Japan and the Philippine Islands has been made by Dr. Kenyon L. Butterfield, former President of the Michigan Agricultural College, under the auspices of the International Missionary Council, in the interest of helping the missionary forces to develop the social, economic and religious life of rural communities. His report on the subject follows upon an earlier one dealing with "The Christian Mission in Rural India," which was published in 1930.

Laymen's Survey.—Under the auspices of the Institute of Social and Religious Research, a comprehensive Laymen's Inquiry into the missionary movement as a whole in three countries,—Japan, China and India, including Burma,—has been in progress throughout the year. Laymen from seven denominations—the Presbyterian Church in the U. S. A., the Reformed Church in America, The United Presbyterian, The Methodist Episcopal, the Congregational, the

Protestant Episcopal, and the Northern Baptist—are participating in the sponsorship. The first part of the survey consisted entirely of a scientific fact-finding process in connection with which deputations of research workers were sent to the Orient to study educational, industrial, social, religious and civic interests. The materials gathered by the fact-finding group were placed in the hands of a second commission, under the leadership of Professor W. E. Hocking of Harvard University, who sailed for the Orient in September and are to give themselves to a general appraisal of missionary policies, programs, and results.

Toyohiko Kagawa.—Probably the most important event of the year, from the standpoint of the interest of the American churches in foreign missions, was the visit of Toyohiko Kagawa to this country during the summer and fall. Dr. Kagawa's visit derived significance from the fact that he is the leader of the most impressive advance which has been definitely projected by the missionary forces in any country. "The Kingdom of God" movement in Japan, which is being carried forward under his leadership, has as its first objective to build up a Christian community of at least 1,000,000 persons in Japan. Its second objective is the training of five thousand Christian lay preachers. The third objective centers around the bringing of spiritual influences to bear upon economic and industrial life.

The Student Volunteer Movement, which is the interdenominational agency for the interesting of young people in colleges and universities in the missionary enterprise, held its quadrennial convention in Buffalo, with an attendance of more than 2,000, during the last week of the year.

HOME MISSIONS

Meetings and Conferences.—Following the North American Home Missions Congress, an interdenominational gathering held in Washington in December, 1930, attended by representatives of practically all the

Protestant agencies for home missions, a series of continuation conferences, designed chiefly to reinforce the tendencies toward cooperation among the missionary boards, have been held in various parts of the country, especially in the far West.

Boulder City.—The most striking development in cooperation during the year has been the establishment of a common religious and social center with ten denominations cooperating, at Boulder City, Nev., the site of the new Hoover Dam. A director, jointly serving the ten participating denominations, began his work Oct. 1. The movement is supported by contributions from the various denominations.

Work for New Buildings.—For the first time a cooperative enterprise to assist local churches of all denominations in campaigns for new buildings has been launched. This has been brought about by the transfer of the Department of Building Funds Campaigns from the Board of National Missions of the Presbyterian Church in the U. S. A. to the Home Missions Council.

CHRISTIAN EDUCATION

At the University of California, in Los Angeles, the first unit of a building erected under unique auspices is under construction. It is the headquarters of what is called The University Religious Conference in which the following groups are cooperating:—The Newman Club (Catholic), the Menorah Society (Jewish), the Y. M. C. A., and a group of seven denominations,—the Baptists, the Congregationalists, the Disciples, the Episcopalians, the Lutherans, the Methodists, and the Presbyterians. The undertaking at Los Angeles is the result of a growing desire to work out plans for some form of united approach on the part of the churches to the students of the great universities. A similar plan has been in operation for some years at Cornell University. Other cooperative undertakings of a less inclusive character have also been developed. At Michigan State College, the Baptist, Congregationalist, Methodist, and Presbyterian denomi-

INTERDENOMINATIONAL ACTIVITIES

nations jointly support a university pastor and a director of religious work among women. At the University of Maine, four denominations unite in a cooperative work among the students; at the Massachusetts State Agricultural College, three; at the College of Agriculture of the University of California, four. During 1931, two denominations which had hitherto not participated in interdenominational endeavors,—the Southern Baptist Convention and the Norwegian Lutheran Church,—have become members of the Council of Church Boards of Education.

THE FEDERAL COUNCIL OF CHURCHES

The Annual Meeting of the Executive Committee of the Federal Council of the Churches of Christ in America, which was held in Philadelphia, Dec. 2-4, marked the completion of the twenty-third year of this federated movement. It is an official body made up of 26 national denominations, which appoint the members of the governing bodies of the Council and of its Executive Committee. The present president of the Council is Bishop Francis J. McConnell of New York.

International Problems.—At the annual meeting this year, the chief center of interest was the functioning of the Council in its relation to the denominations in the field of social and international problems. The report of the Federal Council's Committee on Marriage and the Home, entitled "Moral Aspects of Birth Control," issued earlier in the year, focused attention on the question whether the Council should speak only on those questions on which the denominations have already expressed their position, or whether committees of the Council should study and publish their findings on subjects on which many of the denominations have not themselves spoken. The discussion of both the structure and the function of the Council in its relation to the constituent churches is to be the subject of further study during the coming year preparatory to a final report to be presented at the quad-

rennial meeting of the Council as a whole, to be held in Indianapolis in December, 1932.

Enlarged Activities.—Since its creation in 1908, the Federal Council has gradually increased its range of activities until its work now covers the following major fields, each of which is organized under a special commission and an executive staff: Evangelism, Research and Education, Extension of Cooperation in Local Communities, Social Service, Race Relations, International Justice and Goodwill, Goodwill Between Jews and Christians, Relations with Churches Abroad, Army and Navy Chaplains, Religious Radio, Mercy and Relief.

Birth Control.—The most widely discussed action of the Council during the year was the publication of the report on "Moral Aspects of Birth Control," prepared by the Committee on Marriage and the Home. This document included both a majority and a minority section, the majority section holding that "the careful and restrained use of contraceptives by married people is valid and moral." Supporting this point of view the majority said "they take this position because they believe that it is important to provide for the proper spacing of children, the control of the size of the family and the protection of mothers and children; and because intercourse between the mates, when an expression of their spiritual union and affection, is right in itself." A minority of the Committee held that "in view of the widespread doubt among Christian people of the morality and the use of contraceptives," it appears "to be the plain duty of the Christian church, when control of conception is necessary, to uphold the standard of abstinence as the ideal, recognizing that it is a counsel of perfection, and that Christian morals are much more exalted than is generally supposed." Both the majority and the minority of the Committee agreed upon the necessity of "a high degree of self-control, especially during the early years of married life when marital habits are forming" as "necessary to the happiness of the mates and the spiritual life of the

XVII. RELIGION AND RELIGIOUS ORGANIZATIONS

home." All the members joined in declaring that "if marriage centers upon self-indulgence, it is sure to result in unhappiness and usually in disaster."

The publication of the report precipitated an extensive discussion in which the minority section was largely lost from sight and attention concentrated upon the majority section. One denomination, the Southern Presbyterian, withdrew from the Council, at least for this year. On the other hand, another denomination, the National Council of the Congregational and Christian Churches, singled out the report on birth control for specific commendation. The future relations of the Southern Presbyterians with the Council are now receiving much consideration. Four of the Presbyteries of the Church have already sent up overtures to the General Assembly to resume membership in the Council.

Motion Pictures.—Another aspect of the Council's work which focused public attention was the report of its Research Department on "The Public Relations of the Motion Picture Industry." The report dealt primarily with the relation between the Motion Picture Producers and Distributors of America, Inc., and social and religious organizations. While not undertaking to make a qualitative study of the product of the industry, the report recognized a widespread criticism of films throughout the churches and sought an answer to the question as to whether the policies and methods of the Motion Picture Producers and Distributors of America were such as to commend themselves to the churches. The general conclusion of the report was that although the producers' organization has certain achievements to its credit, some of its methods in dealing with religious and social agencies have militated against any general confidence in the organization.

Social Service.—A National Church Conference of Social Work was held in Minneapolis in June, for the purpose of bringing together leaders from the various denominations who are dealing with the problems of social service of various types. Its

two-fold purpose was to encourage a better professional training on the part of social workers in the churches, and to develop a greater emphasis on the spiritual significance of professional social work. Plans were made for a 1932 conference to be held in Philadelphia under the chairmanship of Rt. Rev. Charles K. Gilbert.

Relief Work.—When news came from China of the disastrous flood during the summer, the Federal Council joined with the Foreign Missions Conference of North America in setting up an appeal for flood relief in China. Another of the Council's programs of relief, undertaken in co-operation with the American Friends Service Committee (Quaker) was in behalf of the suffering families of miners in the coal areas.

Disarmament.—In the field of International Relations, an educational campaign was carried on by the Council in support of the forthcoming Disarmament Conference to be held in Geneva under the auspices of the League of Nations. The Sunday before Armistice Day was designated as an occasion for special emphasis in all the churches on world peace and reduction of armaments, and literature on this subject was distributed to the pastors of the country.

Philippines "Friendship Project."—A "friendship project" between the children of the United States and of the Philippines was launched, as a result of which 28,000 "friendship treasure chests," containing gifts from the children and young people of the American churches were sent to the Filipino school children. The treasure chests were distributed in the Philippines under the auspices of the commissioner of education.

Negro Awards.—The fifth annual awards for "distinguished achievements by Negroes" in the fields of art, music, science, education, business, and religious service were made by the Foundation. A survey of the lynching of a Negro in Maryville, Mo., was conducted as a means of creating sentiment in the churches against the lynching evil.

Economics.—A Labor Sunday Message was issued by the Commis-

sion on Social Service on the theme "Economic Security, A Demand of Brotherhood" and the observance of Labor Sunday was promoted in the interest of stimulating the churches both to play their part in unemployment relief and to study ways of preventing recurring periods of unemployment. A manual on methods of dealing with the problem of unemployment was prepared and circulated among the pastors of all denominations.

International Relations.—The Commission on Relations with Churches Abroad participated in the meeting of the Executive Committee of the Universal Christian Council for Life and Work, held in Cambridge, England, Aug. 23-28. Plans were there made for a great international conference on "Christian Life and Work," to be held in 1935, probably in London, for the purpose of carrying forward the plans begun at the Stockholm conference in 1925 for developing world cooperation among the Protestant and the Eastern Orthodox communions.

Local Federation.—In the field of local federation, the most important development of the year was the launching of the Church Federation of Scranton, Pa., with an Executive Secretary and a budget pledged in advance. State-wide convocations of the pastors of all denominations were held in Ohio, Illinois, Minnesota, Maryland, New York, Oklahoma, Nebraska, Kansas, and Pennsylvania.

Evangelism.—The *Fellowship of Prayer*, a devotional manual for daily use during Lent, was circulated in an edition of 700,000 copies. Emphasizing its interest in evangelism and the development of the personal religious life, the Council has elected a Field Secretary for Evangelism, who will begin work early in 1932.

Religious Services.—Throughout the year the Council has sponsored three Sunday afternoon religious messages over the radio, a mid-week service of worship and a daily morning devotional period, all sent out over a national network of stations. The Sunday afternoon speakers over the radio during the year were S.

Parkes Cadman, Harry Emerson Fosdick, Daniel A. Poling, Charles L. Goodell, Ralph W. Sockman, Frederick H. Knubel, and Frederick K. Stamm.

Denominational Cooperation.—The membership of the Federal Council is confined to Protestant denominations, but on various social and international problems it acts from time to time in conjunction with the National Catholic Welfare Conference and the Central Conference of American Rabbis. A noteworthy instance of such cooperation on the part of the three great religious groups of the country occurred in January, 1931, when they united in holding a national conference in Washington, D. C., on the relation of the churches to unemployment. Although research studies and public statements had been made on many previous occasions by the three groups, the Washington Conference on Unemployment was the first instance when they have joined in sponsoring an important conference attended by delegated representatives of Protestants, Catholics and Jews.

THE CHRISTIAN ASSOCIATIONS

Y. M. C. A.—The Young Men's and Young Women's Christian Associations, while not interdenominational in the strict sense of being governed by and directly responsible to the denominations, include persons of all denominations in their membership and in many ways function as, in effect, interdenominational arms of the churches. The Twentieth World's Conference of the Young Men's Christian Associations was held in Cleveland, Ohio, Aug. 4-9, under the chairmanship of Dr. John R. Mott, with delegates from nearly fifty nations in attendance. In addition to facing its own world problems as an organization, the convention was a forum for discussing many questions of general public interest. A resolution on the question of German war guilt, after affirming "incompetency to deal with any of the political complications of the question," put the members on record as desiring "to dis-

XVII. RELIGION AND RELIGIOUS ORGANIZATIONS

sociate themselves from the injustice of attributing to one nation, or group of nations alone, sole responsibility for the war." "Actual and considerable reduction of armaments" was urged. It was declared to be the judgment of the Conference that no man should be excluded from membership in any Y. M. C. A. solely on the ground of color. Paralleling the sessions of the World's Conference, the Forty-third International Convention of the Young Men's Christian Associations of North America (including the United States and Canada) was in session. The Convention adopted a declaration emphasizing the desirability of providing in the associations an open platform for prophetic utterance on social, industrial and international problems. A special message on "next steps in the religious emphasis" urged all local associations to keep "the distinctively religious character of the Association steadily in view."

Y. W. C. A.—In the Young Women's Christian Associations a major emphasis throughout the year has been placed upon meeting the unemployment situation, the organization having accepted special responsibility for assistance to the "white collar" women and girls throughout the country, both in giving relief and in finding employment.

By reason of the fact that the Y. W. C. A. is in normal contact with a great many of these girls and women, which makes it more likely for them to turn to it than to a relief agency, the Association has made its service in this field one of its most important activities during the period of the depression. The National Board of the Young Women's Christian Associations has prepared a report on homeless women which is to be used by the President's Organization on Unemployment Relief in giving advice and suggestions to local communities. In various cities the Y. W. C. A. has been asked to assume the entire responsibility for securing employment for women, and in other cities the Association has given extensive cooperation to the emergency employment service or the existing employment agencies. Most city associations have provided food and housing, either free or at reduced prices, for girls and women in need. In other cases, rooms have been furnished on a deferred payment plan or relief given in return for services in the building. Attention has also been given to the maintenance of morale in the period of depression, the Association providing a clubhouse with varied activities, including vocational schools and recreational facilities, for thousands of women.

THE ROMAN CATHOLIC CHURCH

BY JOHN B. KELLY

SPIRITUAL DIRECTOR, CATHOLIC WRITERS GUILD OF AMERICA, INC.

STATISTICAL

The Catholic Church in America, according to the latest statistics, has a membership in the lay body of about 21,000,000. Her clergy numbers 26,273 ordained priests, and there are about 15,000 students for the priesthood in the seminaries. There are about 35,000 religious ministering in the 620 hospitals. A survey of the Catholic educational system reveals 2,423,055 children in parochial schools, and a staff of 77,344

teachers. Of this number about 77,000 are supplied by the 117 Religious Orders dedicated to teaching. America's Catholic High Schools number 2,158. There are 13,527 teachers engaged in the latter. Eighty training schools engage 1,385 teachers, and instruct 15,959 students. The 154 Colleges and Universities under Catholic auspices present a personnel of 5,743 teachers instructing 74,889 students. There are 2,544,785

THE ROMAN CATHOLIC CHURCH

pupils studying in Catholic educational institutions in the U. S. A.

CHARITABLE WORK

Charitable and Welfare Works have prosecuted a notable program in relief measures in the past year of international depression. In 128 Homes for the Aged 13,634 inmates were cared for. In the 500 Orphanages about 80,000 needy children were looked after. An average of 350,000 patients were cared for in 606 Catholic hospitals. The infirm, the blind, the deaf, and incurables suffering with cancer were ministered to by the Religious Orders, but the laity ministered to the distressed poor through the St. Vincent de Paul Societies in all the Dioceses of the country, the workers enrolled being 15,700. There are 58 Bureaus of Catholic Charities in as many Dioceses prosecuting measures of organized relief.

The Bishop's Conference held in the City of Washington was one of the outstanding ecclesiastical events of the year. His Eminence Patrick Cardinal Hayes gave expression to the resolutions of Catholic Action in Charities to prosecute a program of cooperation with agencies of Federal and state relief to help meet the emergencies of unemployment. A letter was sent out to all the clergy ordering cooperation with President Hoover's measures for meeting human need. An event of an unusual nature was the appearance of His Eminence Cardinal Hayes before the State Senate of Texas in an address to that body. The invitation and its acceptance has no precedent in the nation's history. Cardinal Hayes enunciated the principle of the Church that refrains from advising the holders of state offices in matters of governmental policies. He thanked them, however, for asking him, a member of the Papal Senate, to say a word of greeting to the body of Texan legislators.

CHURCH BROADCASTING

The National Council of Catholic Men accepted the proposal that their weekly broadcast be but a half hour

in duration, the current tendency of broadcasters being to reduce their time as an accommodation to the Federal Radio Commission. The Paulist Fathers, however, find their station in need of more time to do justice to their obligations of teaching, and they have applied for an extension. Pope Pius XI has been in touch with America in two outstanding broadcasts. Through a world hook-up of 150 stations, the largest recorded in the history of radio, the reigning Pontiff gave utterance to an appeal addressed to the Bishops of the world asking them to do all in their power to alleviate the present misery due to the depression. At its conclusion the Pope imparted his blessing to the needy. The Pontiff was visible to those who had access to a television receiving set. He has also been recorded on the phonograph in the past year.

PAPAL ENCYCLICALS

Wedlock.—One of the Papal Encyclicals affecting American Catholics dated Jan. 8, 1931, presented an appeal for chaste wedlock. It appeared under the title "Casti Connubii" and was expressed in 16,000 words. Its message echoed the plea of Pope Leo XIII beseeching his subjects and their fellows to avoid the menace of doctrines tending to undermine the World's health and happiness by attacking the vital source of the same in the father, mother, and child in the home. An emphatic warning was sounded against the growing tendency to practice those extremes in eugenics preventing marriage as well as child-birth.

World Relief.—In another Encyclical, "Nova Impendent" addressed to the universal Church, the Pope besought his spiritual subjects to enter into a Charity Crusade for the rescue of mankind in distress. He sounded a note of warning to those encouraging an increase of armaments, and asked that all concentrate their energies upon measures for relieving the world's unemployed.

Christian Unity.—The latest Papal Encyclical "Lux Veritatis" to reach America, issued in December

XVII. RELIGION AND RELIGIOUS ORGANIZATIONS

of this year, treats of this Fifteenth Centenary of the Council of Ephesus when the divine maternity of The Blessed Virgin Mary was defined. In this latest Papal document there is an appeal to all separated Christendom to enter into a reunion with the Roman Catholic Church.

CANONIZATION

In preliminaries for canonization 551 causes were presented to the Sacred Congregation of Rites. Those of outstanding interest to Americans are Mother Ann Elizabeth Seton, foundress of the Sisters of Charity in the United States who died in Baltimore in 1821; Felix de Andreis,

Lazarist missionary who died in St. Louis in 1820; Mother Francis Xavier Cabrini, foundress of the Missionary Sisters of the Sacred Heart, who died in Chicago in 1917; Francis Xavier Seelos, redemptorist who died in New Orleans, 1867; Venerable John Nepomucene, who died in Philadelphia, 1860; Magin Catala, Franciscan, who died at Santa Clara, Cal., 1830; Venerable Philippine Rose Duchesne, founder in America of the first convents of the Society of the Sacred Heart, who died in St. Charles, Mo., in 1853; and Mother Theodora Guerin, foundress of The Sisters of Providence, who died in Indianapolis in 1856.

THE ORIENTAL ORTHODOX CHURCH

By WILLIAM CHAUNCEY EMHARDT

NATIONAL COUNCIL OF THE PROTESTANT EPISCOPAL CHURCH IN THE UNITED STATES

CONTRIBUTION TO CHRISTIAN UNITY

Lambeth Conference.—The outstanding act of the Orthodox Church is still held to have been the participation of a large delegation in the Lambeth Conference of 1930 held under the auspices of the Archbishop of Canterbury. While this bears directly upon the relationship of the Orthodox Communion to the Anglican Communion it has a very direct bearing upon the whole problem of Christian unity.

Orthodox-Anglican Cooperation.

—For over a hundred years the Anglican Communion has been working towards a fuller understanding and closer cooperation with the Eastern Churches. The large immigration from southeastern Europe and Asia Minor brought the Eastern Orthodox Church to the attention of America with such intimacy that it became a domestic problem. Immediately before the Great War, demonstrations of friendly relationships and discussions of our common heritage were quite frequent. Under stress of war psychology thoughts in both Churches

were turned towards reunion. In post-war days the exigencies associated with the presence of unshepherded Orthodox in a majority of our parishes demanded attention to a program of cooperation. Although since then there has been an increasing demonstration of friendly relations between the various Churches within the two communions, ministrations of Anglican clergy to members of the Orthodox Communion, although recognized, and in some cases encouraged, have not been regularized.

Economic Intercommunion.—At the time of the Lambeth Conference the chief objective of the conference by common consent was to effect economic intercommunion, or at least regularize the existing conditions of hospitality and occasional ministrations. So-called economic relationships are peculiar to the Orthodox Communion. They are based upon the doctrine of *oikonomia*, stewardship or household policy, which is described in the Lambeth Conference Report (page 135) thus: "It was finally stated that the Orthodox posi-

tion was that the Church has full authority from its Divine Founder to use economy upon matters which concern the advantage of the Church, upon condition that it does not clash in any way with the fundamental grounds of Faith." This, however, is based on dogmatic agreement. There was grave doubt whether the Lambeth Conference was prepared to make a dogmatic statement, and if, when such statement was made, it would be in terms that would be acceptable to a communion as rigidly dogmatic as the Orthodox.

ORTHODOX-ANGLICAN AGREEMENT AT LAMBETH CONFERENCE

As a result the agreement contained in the following "Résumé of the Discussions" was arrived at by the two communions:

1. It was agreed that a Joint Commission of Orthodox and Anglicans should be appointed for the consideration of questions of Doctrine.

2. It was agreed by the Anglican Bishops that the "Terms of Intercommunion suggested between the Church of England and the Churches in Communion with her and the Eastern Orthodox Church," published under the auspices of the Archbishop of Canterbury's Eastern Churches Committee in 1921, though not officially communicated to the different Provinces of the Anglican Communion, are not inconsistent with the mind and doctrine of the Anglican Church.

3. It was agreed by the Orthodox Delegation that the suggested "Terms of Intercommunion," though they had not yet been officially considered, would form a useful basis of discussion with certain modifications.

4. It was stated by the Anglican Bishops that in questions of faith the authentic decision would be given in the Anglican Communion by the whole body of Bishops without, however, excluding the cooperation of clergy and laity during the discussions.

5. It was stated by the Orthodox Delegation that the final authority in matters of Doctrine in the Ortho-

dox Church lies with the whole body of Bishops in Synod, without excluding the expression of opinion by clergymen and laymen.

6. It was stated by the Anglican Bishops that in the Anglican Communion the Bishop has jurisdiction in questions of discipline through his own court in the first instance, with due provision for appeal to the Provincial Court or a similar body.

7. It was stated by the Orthodox Delegation that in the Orthodox Church spiritual causes are tried in spiritual courts, sentence being given in the case of a Bishop by a court of Bishops, in the case of other clergymen by the Bishop through his own court.

8. It was stated by the Anglican Bishops that in the Anglican Communion Ordination is not merely the appointment of a man into a particular post, but that in Ordination a special *charisma* is given to the person Ordained, proper to the Order, and that the nature of the special gift is indicated in the words of Ordination, and that in this sense Ordination is a *mysterion*.*

9. It was stated by the Anglican Bishops that the Preface to the Ordinal declares "that from the Apostles' time there have been these Orders of ministers in Christ's Church; Bishops, Priests and Deacons," and that to preserve unbroken succession the rules regarding Ordination have been framed "to the intent that these Orders may be continued, and reverently used and esteemed, in the Church of England."

10. The Orthodox Delegation stated that they were satisfied with regard to the maintenance of the Apostolic Succession in the Anglican Church in so far as the Anglican Bishops have already accepted Ordination as a *mysterion*, and have declared that the Doctrine of the Anglican Church is authoritatively expressed in the Book of Common Prayer, and that the meaning of the XXXIX Articles must

* The Greeks prefer to speak of "the Holy Mysteries" rather than of "the Sacraments." The latter is a Latin term which we have inherited.

be interpreted in accordance with the Book of Common Prayer.

11. It was stated by the Anglican Bishops that in the Sacrament of the Eucharist "the Body and Blood of Christ are verily and indeed taken and received by the faithful in the Lord's Supper," and that "the Body of Christ is given, taken and eaten in the Supper only after an heavenly and spiritual manner," and that after Communion the consecrated elements remaining are regarded sacramentally as the Body and Blood of Christ; further, that the Anglican Church teaches the doctrine of Eucharistic sacrifice as explained in the Answer of the Archbishops of Canterbury and York to Pope Leo XIII on Anglican Ordinations; and also that in the offering of the Eucharistic Sacrifice the Anglican Church prays that "by the merits and death of Thy Son Jesus Christ, and through faith in His blood, we and all Thy whole Church may obtain remission of our sins, and all other benefits of His passion," as including the whole company of faithful people, living and departed.

12. It was stated by the Orthodox Delegation that the explanation of Anglican Doctrine thus made with regard to the Eucharistic Sacrifice was agreeable to the Orthodox Doctrine, if an explanation were to be set out with all clearness.

13. It was stated by the Anglican Bishops that in different parts of the Anglican Communion, Anglican Clergy, at the request of Orthodox Clergy, provide sacramental ministrations to Orthodox laity, who are out of reach of their own Church's ministrations; that such clergy always desire to keep the Orthodox to whom they minister faithful to the Orthodox Church and are ready to teach them the Orthodox faith and to notify Orthodox Bishops or priests of persons thus receiving their ministration or instruction.

14. It was stated by the Orthodox Delegation that the whole question of arrangements in such circumstances is to come up for discussion at the forthcoming Synod of the whole Orthodox Church.

15. It was stated by the Orthodox Delegation that it is the practice of the whole Orthodox Church not to re-baptize after Anglican Baptism.

16. It was stated by the Orthodox Delegation that in its forthcoming Pro-Synod the Orthodox Church would probably not object to recognizing the Baptism of children and their instruction from Orthodox books by Anglican clergy, or to marriage, or any other rites being performed by Anglican clergy (in case of need and where no Orthodox priest is available), provided that all persons baptized or married are properly registered as Orthodox, and their names notified as soon as possible to the competent Orthodox authority.

17. It was stated by the Orthodox Delegation with regard to the Holy Eucharist that, pending a formal decision by the whole Orthodox Church and therefore without giving the practice official sanction, for which it has no authority, it is of opinion that the practice of the Orthodox receiving Holy Communion from Anglican priests in case of need and where no Orthodox priest was available, might continue, provided that an Orthodox authority did not prohibit such a practice.

✠ Archbishop of Thyateira, G.

A. C. Gloucester:

CONCLUSION

Throughout the whole of the Conference this discussion was viewed as but a step in the whole trend toward Christian unity. In discussion with the Orthodox the obligation of the Anglican Communion to promote affiliation with the Protestant bodies was frankly discussed. The moral necessity of such approaches was fully understood. Fortunately the spirit of Orthodoxy was less rigid than that of Anglicanism. The binding force of this obligation was grasped more intuitively by the most conservative Orthodox, than by some of the members of the Anglican Communion. Viewed from the standpoint of prophets of unity in the Protestant bodies of America, a closer association between the Anglican and Orthodox Communions is accepted as a marked

JUDAISM AND JEWISH COMMUNAL AFFAIRS

step toward the final union of all Christian people. In fact, many of the Protestant leaders shame us by

their zeal in approaching the Orthodox and humiliate us by turning to us for guidance.

JUDAISM AND JEWISH COMMUNAL AFFAIRS

BY BERNARD G. RICHARDS

SECRETARY, AMERICAN JEWISH CONGRESS

ECONOMIC HANDICAPS

Jewish, religious, educational, philanthropic, and similar activities were conducted during the past year with the same devotion and energy which have characterized such activities in previous periods, with this change, that owing to the economic depression some of the institutions have had to curtail their work and those responsible for the various undertakings were in many instances hard put to meet obligations and to carry out plans as originally outlined. In nearly all cases, whether it had to do with (a) the religious instruction of the young and the training of rabbis, (b) the building and maintenance of synagogues and social centers, (c) work of relief both at home and abroad, (d) support for the upbuilding of Palestine, or (e) the protection of minority rights abroad,—leaders and workers felt the effect of the difficult financial situation.

The different local as well as central and national organizations, created for the furtherance of the above aims, had accordingly to devote more time than is usually required in raising their budgets, a number of communities having gone through a veritable crisis in meeting needs incidental to the maintenance of large centers and other educational and religious institutions. Essentially, the record of national and central organizations, to which reference has previously been made and which is listed from year to year in the *American Jewish Year Book*, (Philadelphia: Jewish Publication Society of America) remains the same.

JEWISH EDUCATION

The Jewish Educational Association of New York, Israel Unterberg, President, which, under the active leadership of Bernard Semel, Honorary Secretary, encourages the establishment of and endows various schools, has secured larger funds for its activities, these being paralleled by different bodies in a number of large cities west and south. In a number of these large cities, like Chicago, Boston, Cleveland, Detroit, St. Louis, San Francisco, etc., there exist colleges or schools for the training of religious teachers for the requirements of the various schools in different communities, those which are attached to synagogues and temples, as well as those which are conducted independently by associations of Jewish men and women especially interested in the subject.

Identified with this activity is the Bureau of Jewish Education, New York, Dr. Samson Benderly, Director, which devotes itself chiefly to the elaboration of curriculum and school methods as applied to Jewish education, and the work of this Bureau is duplicated by other cities having similar bureaus or agencies for experimentation, which, for the most part, are associated with colleges devoting themselves to the training of teachers, etc.

Supplementing the educational and cultural activities of other bodies are: Young Judea, an organization of the Jewish youth, sponsored by the Zionists, Rabbi Israel Goldstein, President; Avukah, American Student Zionist Federation, Rabbi Samuel M. Blumenfield, President; Menorah Intercollegiate Association, Henry Hurwitz, Chancellor; the Hillel Foun-

dation for work among students, fostered by the Independent Order B'nai B'rith, Alfred M. Cohen, President.

SYNAGOGUES AND RELIGIOUS WORK

In the work of the synagogue and the extension of its influence in the direction of religious training and general Jewish education, bodies like the Union of American Hebrew Congregations, Charles Shohl, Honorary President, representing the reformed wing of Judaism; United Synagogue of America, Nathan Levy, President, speaking for the conservative or the middle-of-the-road elements; and the Union of Orthodox Jewish Congregations of America, Herbert S. Goldstein, President, aiming to conserve the old and traditional attitude, have played an important rôle during the past year. Among the other forces in the religious life of the Jews of America are the National Federation of Temple Sisterhoods, Mrs. Maurice Steinfeld, President; the National Federation of Temple Brotherhoods, Roger W. Straus, President; and the National Council of Jewish Women, Mrs. Joseph E. Friend, President.

Progress has been made in a number of different cities during the year by the popular movement for the creation of Jewish community centers or Hebrew Young Men or Women's Associations, serving in most instances as combined houses of worship, religious schools and places of recreation. The Jewish Welfare Board, Justice Irving Lehman, President, a joint outgrowth of early centralized activities of the Young Men's Hebrew Associations with later ministrations to Jewish members of the United States Army and Navy, especially in the World War, now directs its chief efforts towards the encouragement of the establishment of these and other Jewish social centers, and the development of educational and literary programs for them.

THEOLOGICAL SEMINARIES

Yeshiva College.—As has been indicated before, the latest addition to the Jewish Theological seminaries is the Yeshiva College, of which the

Rev. Dr. Bernard Revel is President, this institution being an outgrowth of the ultra-orthodox Yeshiva or Isaac Elchanan Seminary of the lower East Side of New York, which, with the opening of the new building at Amsterdam Avenue and 186th Street, a few years ago, entered upon its career as a combined religious seminary and secular college, offering for the first time an example of a college modeled along parochial lines. The Yeshiva College has become a member of the Liberal Arts College movement, an association of some 200 colleges throughout the country, including some of the oldest and best known, to promote public understanding of the aims and ideals of the Liberal Arts colleges, in which the harmony of spirituality and culture is most vitally preserved, and to organize the influence of the many colleges into a unified educational campaign for the betterment of collegiate conditions and the solidification of resources and maintenance funds.

Jewish Theological Seminary, New York, Dr. Cyrus Adler, President, has recently formally dedicated its group of three new buildings on Broadway, 122nd and 123rd Streets. One of the buildings is for the use of the students as a dormitory, one for the several departments of the Teachers Institute for the training of Jewish religious teachers, and the other for the library and museum, thereby offering to the Jews of America the facilities of the greatest collection of Jewish books and manuscripts in existence.

Hebrew Union College, Cincinnati, Dr. Julian Morgenstern, President, reports as its significant recent achievements the following: first, the decided raising of the standards of admission to, and of work within, the college; second, the filling of the chair of Jewish Philosophy, vacant since the death of Dr. David Neumark in 1924, with the appointment of Dr. Z. Diesendruck, formerly of the Hebrew University in Jerusalem; third, the progress of work upon the new Hebrew Union College Library building, which is now rapidly nearing completion.

Jewish Institute of Religion, New York, Dr. Stephen S. Wise, President, has published during the course of the year, a *Lexicon to Josephus*, Part I, compiled by H. St. John Thackeray, Honorary D.D. Oxford and Durham Universities, under the auspices of the Alexander Kohut Memorial Foundation. As planned by Dr. Thackeray, the lexicon will be issued in eight parts. This monumental work, which was interrupted by his death after the completion of the first three parts, will be completed in the course of the next two years by Professor Ralph Marcus of the Institute Faculty.

THE JEWISH POSITION IN PALESTINE

The efforts for the upbuilding of a Jewish National and political center in Palestine have continued to occupy the attention of the World Zionist Organization, the Jewish Agency, as well as the Zionist federations in the different countries corresponding to the Zionist Organization of America. The Seventeenth Biennial International Congress of the World Zionist Organization, held in Basle June 30, July 15, 1931, proved to be a controversial and stormy session owing to dissatisfaction with the attitude of the Mandatory Power, Great Britain, in administering the affairs of Palestine, the delegates echoing again resentment at the Arab massacres of 1929, the whitewashing Shaw Report and the subsequent Passfield Paper intended to whittle down the pledge contained in the celebrated Balfour Declaration of 1917.

Dr. Chaim Weizmann, leader of the Organization since the beginning of the World War, as well as the members of his Cabinet or Executive Committee, came under the ban of the same criticism, and the protracted, heated debates which lasted for many days, finally led to the elimination of Dr. Weizmann as President of the World Zionist Organization. The election to the office of President of Nahum Sokolow, the veteran Hebrew publicist, however, enabled Dr. Weizmann's defenders and followers to claim that while he himself was de-

nied reelection, his principles prevailed since Mr. Sokolow as Chairman of the Executive Committee had shared responsibility for all of Dr. Weizmann's policies as well as for the alleged too conciliatory attitude on the part of the Zionist Executive Committee to the British Government. The Congress, nevertheless, closed in harmony, the delegates from different lands manifesting, as heretofore, determination and eagerness to push forward the work of colonization in Palestine.

With the arrival in November of the new High Commissioner, Sir Arthur Grenfell Wauchope, a new sense of assurance and hopefulness appears to be animating the activities of the Jewish settlers in the Holy Land. The newly established Jewish Agency, Dr. Oscar Wassermann, Chairman, is as heretofore cooperating in the work of the Zionist Organization.

EUROPEAN RELIEF

The Joint Distribution Committee, Felix M. Warburg, Chairman, has continued to carry on its various activities for the relief of members of Jewish communities in Poland, Russia, Roumania, and other Eastern European countries where economic depression has now added to the burdens left behind by the ravages of the Great War. In addition, Soviet Russia, with approximately 1,000,000 declassed Jews, and with all kinds of complications created by the Bolshevik crusade against religion, Jewish culture, etc., has given further cause for anxiety to American Jewish organizations and to Jews here generally who are interested in the plight of their brethren abroad. The agricultural enterprises not having fulfilled their early promise, emphasis has now been shifted to industrialization in the cities. The task is a huge one and destitution in the large cities continues to be intense; but some of the men engaged in the work are hopeful of an early change for the better. Bolshevik opposition to religion of every form and to the Hebrew language and Zionism has remained a source of concern to observant and

XVII. RELIGION AND RELIGIOUS ORGANIZATIONS

believing Jews, though there has been some relaxation in the rigor with which the Soviets previously suppressed every manifestation of Judaism, Zionism and Hebrew culture. Associated with the Joint Distribution Committee in the work of relief in Russia is the American Committee of the Ort of which Murray Levine is Chairman. The Ort specializes in providing machinery and tools for Jewish laborers and in encouraging manual training and activities within the Jewish population.

PROTECTION OF JEWISH MINORITIES

American Jewish Congress.—Denial or curtailment of the rights of Jewish citizenship and other forms of injustice and intolerance practised from time to time in various Eastern European countries, more especially in Roumania, Poland, and Hungary, have continued the basis of activities in the form of representations to the

governments in behalf of fair treatment, appeals to public opinion, etc., conducted by the American Jewish Congress, Bernard S. Deutsch, President, which body has recently also dealt with the problem of discrimination against Jews in the field of employment in the United States.

Poland.—Both the American Jewish Congress and the American Jewish Committee have recently dealt with the problem created by a series of attacks upon the Jews of Poland, riots and disturbances in the cities of Warsaw, Cracow, Vilna, Lemberg, Pruskov, Posen, Lomza, and other cities, having been started as the result of hostility toward Jews in different Polish universities. These disorders which were begun by Christian students, responding to anti-Semitic agitation, have subsided at the time of the present writing, the Polish authorities having manifested an earnest desire to prevent any such further acts of lawlessness.

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

(For further information, the reader may address the following organizations)

NATIONAL CHURCHES

AMERICAN CONGREGATIONAL ASSN., 14
Beacon St., Boston, Mass.
AMERICAN THEOSOPHICAL SOCIETY,
Wheaton, Ill.
AMERICAN UNITARIAN ASSN., 25
Beacon St., Boston, Mass.
ANGELICAN UNIVERSAL CHURCH OF
CHRIST IN THE U. S. A., 22 E. 38th
St., New York City.
BOARD OF DIRECTORS OF THE GENERAL
SYNOD OF THE REFORMED CHURCH
IN AMERICA, 25 E. 22nd St., New
York City.
CENTENARY CONSERVATION COMMIT-
TEES OF THE METHODIST EPISCOPAL
CHURCH, 111 5th Ave., New York
City.
CHRISTIAN SCIENCE CHURCH, 11 W.
42nd St., New York City.
CONGREGATIONAL CONFERENCE, INC.,
287 Fourth Ave., New York City.
FREETHINKERS' SOCIETY OF NEW
York, 226 W. 58th St., New York
City.

FRIENDS' GENERAL CONFERENCE, 1515
Cherry St., Philadelphia, Pa.
GENERAL CONFERENCE OF SEVENTH-
DAY ADVENTISTS, 140 Eastern Ave.,
N. W., Takoma Park, Washington,
D. C.
GENERAL COUNCIL OF THE PRESBYTER-
IAN CHURCH IN THE U. S. A., 156
Fifth Avenue, New York City.
NATIONAL LUTHERAN COUNCIL IN
AMERICA, 437 Fifth Ave., New York
City.
NATIONALIST SPIRITUAL ASSN., 600
Penn Ave., S. E., Washington, D. C.
NORTHERN BAPTIST CONVENTION, 5109
Waterman Ave., St. Louis, Mo.
SOCIETY FOR ETHICAL CULTURE OF
NEW YORK, 2 W. 64th St., New
York City.
UNION OF AMERICAN HEBREW CON-
GREGATIONS, Merchants' Building,
Cincinnati, Ohio.
UNION OF ORTHODOX JEWISH CONGRE-
GATIONS OF AMERICA, 50 W. 77th
St., New York City.

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

UNITED LUTHERAN CHURCH IN AMERICA, 39 E. 35th St., New York City.
 UNITED SYNAGOGUE OF AMERICA, 531 W. 123rd St., New York City.
 UNIVERSALIST GENERAL CONVENTION, 176 Newburg St., Boston, Mass.
 VEDANTA SOCIETY, 34 W. 71st St., New York City.
 VOLUNTEERS OF AMERICA, 34 W. 28th St., New York City.

INTERNATIONAL ORGANIZATIONS

ALLIANCE OF REFORMED CHURCHES THROUGHOUT THE WORLD HOLDING THE PRESBYTERIAN SYSTEM, 510 Witherspoon Bldg., Philadelphia, Pa.
 ASSN. FOR THE PROMOTION OF CHRISTIAN UNITY, Chamber of Commerce Bldg., Room 412, Indianapolis, Ind.
 BAPTIST WORLD ALLIANCE, Bates College, Lewiston, Me.
 CENTRAL BUREAU OF EVANGELICAL CHURCHES IN EUROPE, 105 E. 22nd St., New York City.
 COMMITTEE ON COOPERATION IN LATIN AMERICA, 419 Fourth Ave., New York City.
 CONTINUATION COMMITTEE OF WORLD CONFERENCE ON FAITH AND ORDER, P. O. Box 226, Boston, Mass.
 ECUMENICAL METHODIST CONFERENCE, 145 Westervelt Ave., Plainfield, N. J.
 INTERNATIONAL ASSN. OF DAILY VACATION BIBLE SCHOOLS, 100 E. 42nd St., New York City.
 INTERNATIONAL CONGREGATIONAL COUNCIL, 14 Beacon St., Boston, Mass.
 INTERNATIONAL CONGRESS OF RELIGIOUS LIBERALS, 25 Beacon St., Boston, Mass.
 INTERNATIONAL COUNCIL OF RELIGIOUS EDUCATION, 1516 Mallers Bldg., 5 S. Wabash Ave., Chicago, Ill.
 INTERNATIONAL EVANGELISTIC BUREAU OF THE U. S. A., 1111 Walnut St., Cairo, Ill.
 INTERNATIONAL SOCIETY OF CHRISTIAN ENDEAVOR, 41 Mt. Vernon St., Boston, Mass.
 LAMBETH CONFERENCE, ANGLICAL COMMUNION, Bishop of Winchester, England.
 LUTHERAN WORLD CONVENTION, 437 Fifth Ave., New York City.

PROTESTANT UNITY LEAGUE, 71 W. 23rd St., New York City.
 UNIVERSAL CHRISTIAN CONFERENCE ON LIFE AND WORK, 70 Fifth Ave., New York City.
 WORLD'S STUDENT CHRISTIAN FEDERATION, 70 Fifth Ave., New York City.
 WORLD'S SUNDAY SCHOOL ASSN., 1 Madison Ave., New York City.

INTERCHURCH ORGANIZATIONS

AMERICAN SECULAR UNION, P. O. Box 1109, Chicago, Ill.
 AMERICAN SUNDAY SCHOOL UNION, 1816 Chestnut St., Philadelphia, Pa.
 CHAPLAINS' AID ASSN., 401 W. 59th St., New York City.
 CHRISTIAN UNITY FOUNDATION, 70 Fifth Ave., New York City.
 CHURCH PEACE UNION, 70 Fifth Ave., New York City.
 COMMISSION OF REFERENCE AND COUNCIL COMMITTEES, 25 Madison Ave., New York City.
 CONFERENCE OF THEOLOGICAL SEMINARIES AND COLLEGES, Lancaster, Pa.
 COUNCIL OF CHURCH BOARDS OF EDUCATION, 111 Fifth Ave., New York City.
 FEDERAL COUNCIL OF CHURCHES, 71 W. 23rd St., New York City.
 FEDERAL COUNCIL OF CHURCHES OF CHRIST IN AMERICA, 105 E. 22nd St., New York City.
 FEDERATION OF CHURCHES, 71 W. 23rd St., New York City.
 FELLOWSHIP OF RECONCILIATION, Bible House, New York City.
 INTERDENOMINATIONAL EVANGELISTIC ASSN., Winona Lake, Ind.
 NATIONAL COUNCIL OF PROTESTANT EPISCOPAL CHURCHES, 281 Fourth Ave., New York City.
 NATIONAL FEDERATION OF RELIGIOUS LIBERALS, 700 Oakwood Boulevard, Chicago, Ill.

AUXILIARY ORGANIZATIONS

CATHOLIC CHURCH EXTENSION SOCIETY OF THE U. S. A., 180 N. Wabash Ave., Chicago, Ill.
 CATHOLIC GUARDIAN SOCIETY, 130 W. 37th St., New York City.
 CATHOLIC PROTECTIVE SOCIETY, 477 Madison Ave., New York City.

XVII. RELIGION AND RELIGIOUS ORGANIZATIONS

EPWORTH LEAGUE OF THE METHODIST
EPISCOPAL CHURCH, 740 Rush St.,
Chicago, Ill.

KINGS DAUGHTERS AND SONS, 280
Madison Ave., New York City.

LORD'S DAY ALLIANCE, 156 Fifth Ave.,
New York City.

PRISON EVANGEL ASSN., 156 Fifth
Ave., New York City.

SUNDAY SCHOOL COMMISSION, INC.,
416 Lafayette St., New York City.

WOMAN'S CHRISTIAN TEMPERANCE
UNION, Evanston, Ill.

WOMAN'S NATIONAL SABBATH ALLI-
ANCE, 156 Fifth Ave., New York
City.

YOUNG MEN'S CHRISTIAN ASSN., 347
Madison Ave., New York City.

YOUNG WOMEN'S CHRISTIAN ASSN.,
600 Lexington Ave., New York
City.

RELIGIOUS PUBLICATIONS

AMERICAN BAPTIST PUBLICATION SO-
CIETY, 1701 Chestnut St., Philadel-
phia, Pa.

AMERICAN BIBLE SOCIETY, Bible
House, New York City.

AMERICAN TRACT SOCIETY, 7 W. 45th
St., New York City.

CHICAGO TRACT SOCIETY, 440 S. Dear-
born St., Chicago, Ill.

GIDEONS, 140 E. Dearborn St., Chi-
cago, Ill.

INSTITUTE OF SOCIAL AND RELIGIOUS
RESEARCH, 230 Park Ave., New
York City.

NATIONAL TESTAMENT AND TRACT
LEAGUE, 200 Kellogg Bldg., Wash-
ington, D. C.

POCKET TESTAMENT LEAGUE, 156 Fifth
Ave., New York City.

RELIGIOUS EDUCATION ASSN., 308 N.
Michigan Ave., Chicago, Ill.

RELIGIOUS PUBLICITY, 701 W. 177th
St., New York City.

SOCIETY FOR THE PROPAGATION OF THE
FAITH, 462 Madison Ave., New
York City.

SOCIETY OF BIBLICAL LITERATURE AND
EXEGESIS, Broadway at 120th St.,
New York City.

MISSIONARY

AMERICAN BOARD OF COMMISSIONERS
FOR FOREIGN MISSIONS, 14 Beacon
St., Boston, Mass.

AMERICAN MCALL ASSN., 1713 San-
som St., Philadelphia, Pa.

CHRISTIAN AND MISSIONARY ALLI-
ANCE, 260 W. 44th St., New York
City.

CONTINUATION COMMITTEE OF THE
WORLD MISSIONARY CONFERENCE, 25
Madison Ave., New York City.

COUNCIL OF WOMEN FOR HOME MIS-
SIONS, 105 E. 22nd St., New York
City.

FEDERATION OF WOMEN'S BOARDS OF
FOREIGN MISSIONS, 419 Fourth
Ave., New York City.

FOREIGN MISSIONS CONFERENCE OF
N. A., 419 Fourth Ave., New York
City.

INTERNATIONAL MISSIONARY CONFER-
ENCE, 347 Madison Ave., New York
City.

INTERNATIONAL MISSIONARY UNION,
71 W. 23rd St., New York City.

NATIONAL COUNCIL OF JEWISH
WOMEN, 1776 Broadway, New York
City.

NEAR EAST RELIEF, 149 Fifth Ave.,
New York City.

STUDENT VOLUNTEER MOVEMENT FOR
FOREIGN MISSIONS, 419 Fourth
Ave., New York City.

WOMAN'S UNION MISSIONARY SO-
CIETY, 67 Bible House, New York
City.

PART SIX

SCIENCE—PRINCIPLES AND APPLICATION

DIVISION XVIII

MATHEMATICS AND ASTRONOMY

MATHEMATICS

BY TOMLINSON FORT

PROFESSOR, LEHIGH UNIVERSITY

RESEARCH

Review.—The amount of research done each year by American mathematicians continues to increase. During the calendar year, 1931, about four hundred and fifty papers were presented to the American Mathematical Society. Each of these papers was accepted by the program committee as embodying some mathematical theory that was new to the world. Not all papers presented to the Society are published. However, many are published and the problem of adequate publication facilities is increasingly acute. To review this vast mass of mathematics is out of the question. Moreover, mathematical research is so technical in character that to even understand what it is about, in many instances, requires that the reader be trained in the particular portion of mathematics in question. Consequently in this article only a few pieces of research will be discussed with many apologies to the authors of the fine papers which it is impossible to mention.

The Problem of Plateau.—This classical problem is to prove the existence of a surface of minimum area bounded by a given contour. Jesse

Douglas, of the Massachusetts Institute of Technology, has done the best known work on this problem. He has read a number of papers on it before the American Mathematical Society from time to time and in January, 1931, published a paper of fifty-nine pages in which he gives a complete solution, in so far as an arbitrary Jordan curve in n -dimensional Euclidean space is concerned. T. Radó of Ohio State University has also done important research on the problem of Plateau. In 1930 he published a solution of a somewhat more special problem than that solved by Douglas. He also presented additional papers on the subject to the American Mathematical Society in 1931.

Theory of Numbers.—The work of H. S. Vandiver of Texas on Fermat's last theorem was mentioned in THE AMERICAN YEAR BOOK article on mathematics in 1929. It is significant that he has just been awarded the Cole Prize in the Theory of Numbers for this work. This coveted mathematical award was named in honor of the late Professor Frank Nelson Cole, of Columbia University. Another American to win recognition for

his work in the theory of numbers is Morgan Ward, of Pasadena, Calif. Among his papers during 1931 were three in the Transactions of the American Mathematical Society. It should be noticed that one of these papers is concerned with the solution of a diophantine equation. This means the finding of integers which satisfy an algebraic equation, and is the kind of thing dealt with in Fermat's last theorem. The name is taken from Diophantus, the greatest student of algebra in the classical Greek period. R. D. Carmichael and H. T. Engstrom have written interesting papers in this field on sequences defined by linear recurrent relations.

Laplace's Integral.—The representation of functions by formulas has always been one of the major problems of mathematics. The representation by a particular integral, known as Laplace's integral, has been studied by many mathematicians. The very general class of functions that can be represented in this way is surprising. The work of D. V. Widder has been particularly noteworthy. He published a paper in October in which he very considerably extended our knowledge of this problem. He also delivered an address on it in New York before the American Mathematical Society.

Multiplication of Series.—The casual student of series is apt to think that infinite series can be used just as polynomials are used and is always surprised to find the very numerous places in which this is not the case. Some critical study of the multiplication of series was made at least one hundred years ago. However, the question lay dormant for a long time, until recent studies of Dirichlet series brought forward new rules for forming the so-called product series. During 1931, D. H. Lehmer published extensively on the general theory of forming product series. It is surprising that this work had not been done earlier. There was also a closely related paper by P. A. Fraleigh.

Separation, Comparison, Oscillation Theorems and Related Expansion Problems.—This heading includes a large number of theorems relative to the solutions of linear differential equations. The theory probably had its inception in the work of Sturm, about one hundred years ago, disappearing from notice after his death. It, however, had a vigorous revival in America about twenty-five years ago, due to the work of the late Maxime Bocher, of Harvard. There had been something of a lull in this work, but during 1931 there appeared noteworthy papers extending this already voluminous theory. Particularly to be mentioned are papers by G. A. Bliss and I. G. Schoenberg, W. T. Reid, and L. Bristow.

Dirichlet Series.—Of the very considerable work done on Dirichlet Series, we mention the work of Hille and Bohnenblust who solved a problem on absolute convergence proposed by Harold Bohr of Copenhagen some years ago, also the paper by S. Mandelbrojt and J. J. Gergen on "Entire Functions Defined by Dirichlet Series," in which the authors establish an extension of the "Line of Julia" for power series. This is particularly interesting as another theory for power series which now has been extended to Dirichlet series. In writing of Dirichlet series, it is also well to note the lecture at New York of Harold Bohr, in which he reviewed the present status of the theory.

Analysis Situs.—This is a branch of mathematics in which America holds a preeminent position. Outstanding work has been done by A. B. Brown, W. W. Flexner, S. Lefschetz, Marston Morse, W. C. Whitney, Auriel Wintner, Oscar Zariski and others. Mention of the work of past students of R. L. Moore is made later.

Problem of Lagrange in the Calculus of Variations.—Last year attention was called to the extensive treatment of this problem by G. A. Bliss. As is usually true when an able summation of an extensive theory is made, Bliss's memoir was

immediately followed by additional research. Papers during 1931 by Marston Morse, A. B. Brown and L. M. Graves are to be noted.

Geometry.—Although geometry is generally considered one of the major divisions of mathematics there is no sharp line between geometry and analysis. Consequently the classification of certain work as geometrical is largely a matter of convenience and most work in analysis can be given a so-called geometrical interpretation. So the classification of papers under the heading of geometry can not always be done with sureness. However, there have been numerous papers published during 1931 which would surely be so classified, including the work on the problem of Plateau already discussed. We mention in addition the work of Veblen and Whitehead on the foundations of differential geometry, the work of T. Y. Thomas on "the unified field theory," of E. H. Cutler on the problem of curvature in n -dimensional spaces, also papers by H. V. Craig, V. G. Grove, M. M. Slotnick and A. W. Tucker.

Celestial Mechanics.—In the early days of mathematics much of the inspiration of the mathematician came from astronomy. Although this has been a lessening influence, work in celestial mechanics still interests a number of people. During 1931, as judged by the volume of publication, this interest seemed to be somewhat greater than in the past few years. Specific mention is made of the work of E. W. Brown, C. A. Shook, K. P. Williams, Jenny E. Rosenthal and Monroe Martin. Much of the work of these authors has to do with the problem of three bodies, that is, the study of the motion of three bodies under mutual gravitational attraction. This has been studied from early times but there are a number of mathematical questions about it still unanswered.

MATHEMATICS AND CHEMISTRY

The American Chemical Society held a symposium on "Mathematics in the Service of Chemistry" at its

spring meeting in Indianapolis. Dr. T. H. Gronwall has been the American mathematician probably best known of recent years for his work on the applications of mathematics to chemistry. He read several papers before the American Mathematical Society on this subject during the year.

MATHEMATICS AND PHYSICS

A joint session of the American Mathematical Society and the American Physical Society was held in New Orleans on Dec. 29 and the discussion was devoted to the mathematical problems of modern physics.

PUBLICATIONS

Books.—Notable books appearing during the year were: *The Elementary Theory of Tensors*, T. Y. Thomas; University of Chicago *Contributions to the Calculus of Variations*; *Analysis Situs*, second edition, O. Veblen; *Numerical Mathematical Analysis*, J. B. Scarborough; *Vector and Tensor Analysis*, A. P. Wills.

Journals.—On account of the ever increasing amount of research the mathematical journals published in America have maintained the record size of 1930 and are unable to keep up with the publication of good papers which are presented to them. The establishment of new mathematical journals is one of the crying needs of mathematics so that the increasing volume of research may receive prompt publication. As editors of the *Transactions* of the American Mathematical Society, R. D. Carmichael and J. D. Tamarkin replaced H. H. Mitchell and Dunham Jackson respectively. W. B. Carver, of Cornell University, assumed office as the new editor-in-chief of the *American Mathematical Monthly* on Dec. 31, to succeed W. H. Bussey, of the University of Minnesota.

MEETINGS

The American Mathematical Society held meetings during the year as follows: New York City, Feb. 28, April 3 and 4, and Oct. 31; Chicago, April 3 and 4; Berkeley, April 11;

Seattle, June 13; Minneapolis, Sept. 8 to 11; Pasadena, Nov. 28; Columbus, Nov. 27 and 28; New Orleans, Dec. 28 to 31.

The Mathematical Association of America held meetings at Minneapolis, Sept. 4 to 8, and in New Orleans, Dec. 31. It also held numerous sectional meetings from time to time throughout the country. The meeting in Minneapolis was featured by a series of Colloquium Lectures on the Calculus of Variations, presented by Professor Marston Morse, of Harvard. The officers of the Society regard the Colloquium Series as one of its most important functions.

Summer School.—A summer school of methods for teaching mathematics to students of Engineering was held in Minneapolis for the two weeks prior to the meetings of the Mathematical Association of America and the American Mathematical Society. This was sponsored jointly by the mathematical organizations and the Society for the Promotion of Engineering Education. There were a number of speakers and the sessions were generally well attended.

ADDRESSES

Each year the American Mathematical Society invites certain mathematicians to give addresses before it on mathematical fields in which they are considered to have exceptional scholarship. Such addresses were given during 1931 by C. R. Adams, W. Blaschke, H. F. Blichfeldt, G. A. Bliss, G. D. Birkhoff, Harold Bohr, E. R. Hedrick, Edmund Landau, C. C. MacDuffee, W. A. Manning, G. Y. Rainich, J. A. Schouten, W. F. G. Swann and D. V. Widder.

NOTED FOREIGN MATHEMATICIANS IN AMERICA

Among the distinguished foreign mathematicians to visit America during the year were: Harold Bohr, W. Blaschke, W. de Sitter, P. A. M. Dirac, A. Einstein, R. A. Fisher, Edmund Landau, K. Menger, W. Pauli, J. A. Schouten, A. Sommerfeld and T. von Karman.

AMERICAN MATHEMATICIANS LECTURING ABROAD

G. D. Birkhoff, of Harvard, lectured in Paris and S. Lefschetz, of Princeton, lectured in Moscow, Hamburg, Göttingen, Pisa, Cambridge and Rome.

VISITING LECTURER OF THE AMERICAN MATHEMATICAL SOCIETY

Professor R. L. Moore, of the University of Texas, was appointed Visiting Lecturer by the American Mathematical Society. This is the first time that a native American has been appointed to this post, and is an outstanding tribute to the position which Professor Moore has come to hold in American mathematics. Not only is his own work well known but many of his students have also done fine research in analysis situs, which is Professor Moore's specialty. Among the better known of these men are: W. L. Ayres, C. M. Cleveland, J. L. Dorroh, D. A. Flanders, H. M. Gehman, J. R. Kline, R. G. Putnam, J. H. Roberts, N. E. Rutt, P. M. Swingle, G. T. Whyburn, R. L. Wilder and L. Zippin.

DOCTORATES IN MATHEMATICS

During 1930, the degree of Doctor of Philosophy was awarded in American universities to eighty persons, majoring in mathematics or mathematical physics. This is a considerably greater number than had been awarded in any previous year. They will be found listed by name, together with the titles of their dissertations, in the *Bulletin* of the American Mathematical Society for March, 1931, and for May, 1931.

NATIONAL RESEARCH FELLOWS IN MATHEMATICS

The following men were active national research fellows in mathematics on Jan. 1, 1931. R. P. Agnew, A. C. Berry, Leonard Carlitz, Benedict Cas- sen, L. W. Cohen, C. C. Craig, J. L. Dorroh, H. T. Engstrom, O. J. Farrell, D. H. Lehmer, S. B. Littauer, N. H. McCoy, E. J. McShane, Gordon Pall, W. T. Reid, Wladimir Seidel, W. J. Trjitzinsky, Jacob Yerushalmy, Leo Zippin.

MATHEMATICS BUILDINGS

During the year fine buildings were dedicated at the University of Chicago and at Princeton to house the mathematical activities at these universities.

PI MU EPSILON HONORARY MATHEMATICAL FRATERNITY

Pi Mu Epsilon honorary mathematical fraternity, which seeks to bring recognition to the outstanding students of mathematics in the American universities continues to prosper. Charters were granted during the year to the University of Washington, Washington State College, the University of Oregon, and Duke University. The Director General of Pi Mu Epsilon is Dean Louis Ingold of the University of Missouri to whom petitions for charters of the fraternity are sent.

ITALIAN AND GERMAN MATHEMATICAL SOCIETIES

During 1931, reciprocal arrangements were concluded by the American Mathematical Society and the mathematical societies of Germany and Italy, each society giving special privileges to the members of the other. It is hoped that this will be beneficial to American mathematical scholarship.

PRESIDENT OF THE AMERICAN MATHEMATICAL SOCIETY

The greatest honor which can be conferred by American mathematicians on one of their own number is to elect him President of the American Mathematical Society. Only persons with the very highest scholarly attainment in mathematics have at any time been elected to this high office. The President during 1931 was Luther Pfahler Eisenhart of Princeton University. Professor Eisenhart is a native of Pennsylvania, who took his Ph.D. degree at Johns Hopkins University in 1900. He has held various academic positions. Since 1909, he has been professor of mathematics at Princeton and Dean of the Faculty since 1925. His work in differential geometry is internationally known. Particularly to be mentioned is a large treatise on the subject written about twenty years ago, his *Riemannian Geometry*, published five years ago, and a book of the Colloquium Series of the American Mathematical Society on *Non-Riemannian Geometry*. He also has written numerous research papers, being one of the leaders of the internationally known Princeton school of geometry.

ASTRONOMY

BY BANCROFT WALKER SITTERLY

PROFESSOR, WESLEYAN UNIVERSITY

SOCIETIES

The American Astronomical Society met in December, 1930, at Yale University Observatory, New Haven, and in September, 1931, at Perkins Observatory, Delaware, O. At the latter meeting Director W. S. Adams of Mount Wilson Observatory was elected president for three years.

The American Association for the Advancement of Science, Section D (Astronomy), met in Cleveland in December, 1930, and in Pasadena in June, 1931. Dr. J. H. Moore

of Lick Observatory was vice-president for 1931.

The Astronomical Society of the Pacific held its annual summer meeting for the presentation of scientific papers at Pasadena, in conjunction with Section D of the American Association. The president of the society for 1931 was Dr. A. H. Joy of Mount Wilson Observatory.

OBSERVATORIES

Harvard.—Despite the financial depression, several observatories initi-

ated in 1931 important additions to their equipment. Harvard College Observatory, whose most powerful instruments are at present at its southern station near Bloemfontein, South Africa, announced the immediate construction of a 60-inch reflecting telescope, duplicate of the Harvard reflector in South Africa. It will be located on Oak Ridge, Harvard, Mass., 27 miles from Cambridge, away from the coast and the city lights, and some of the instruments now in use at Cambridge will be moved out to the same place. The offices and library, and some of the instruments, will remain at Cambridge, and a new fireproof building is being erected there to house the observatory's unrivalled collection of celestial photographs. Harvard Observatory also established in 1931 a new station at Flagstaff, Ariz., for the intensive visual and photographic study of meteors. Professor Ernest Opik of Tartu, Esthonia, and Professor S. L. Bouthroyd of Cornell University are now at Flagstaff coöperating in this work.

The United States Naval Observatory ordered a 40-inch reflector of the Ritchey-Chrétien type, with mirrors ground to transcendental surfaces to eliminate the principal aberrations of the usual type of reflector. No large instrument of this pattern is yet in use, and the test of its performance under the conditions of a practical observing program will be awaited with great interest. Professor Ritchey, who will build it, designed the 60- and 100-inch telescopes at Mount Wilson.

University of Toronto.—Funds for a new observatory were presented to the University of Toronto by Mrs. David Dunlap and her son. Its principal instrument will be a 74-inch reflector, which will take from the 72-inch of the Dominion Astrophysical Observatory at Victoria, B. C., the titles of largest telescope in Canada and second largest in the world.

The Fels Planetarium. the second to be built outside of Europe, will form part of the astronomical section of the great Franklin Institute Museum now under construction at

Philadelphia. The first American planetarium is the highly successful Adler Planetarium at Chicago; the third will probably be the Griffith Planetarium at Los Angeles. The astronomical section of the museum will also contain, in addition to models, transparencies, and historical exhibits, a 20-inch reflector, a 10-inch refractor, and an 80-foot coelostat telescope, which will project a large image of the solar disc into the planetarium lobby on fair days. It is hoped to have the section completed by the beginning of 1933.

CLOCKS

No instrument of modern science has been developed to a greater pitch of accuracy than the observatory time-keeper. The present-day clock, running at constant temperature in a partial vacuum, has so uniform a rate that it is very difficult to devise a method of checking its accuracy over short periods. Over long periods it is checked against the rotation of the earth, by observation of star transits, but a considerable series of these has to be taken, or the observational errors are greater than the clock errors. The "crystal clock" developed at the Bell Telephone Laboratories by W. A. Marrison appears now to provide the desired check. It is a crystal of quartz vibrating at 100,000 cycles a second, under the impulse of an electric current. At Tuxedo Park, N. Y., A. L. Loomis has for more than two years been intercomparing three Shortt "Synchrone" clocks, using a chronograph controlled by one of these crystals. The chronograph records every hundredth beat of the crystal, or thousandth of a second, separately; it also records a signal given by each clock every thirty seconds. If the rate of one clock varies, its record on the chronograph shows a difference from those of the other two. If the records of all three vary together, something is affecting either the three clocks, or the crystal. As the latter is in New York—its impulses coming into Mr. Loomis's laboratory over a forty-mile wire—the same disturbances are not likely

to affect both crystal and clocks, and they can be investigated separately.

A study of eight months' records, by Professor E. W. Brown and Dr. Brouwer of Yale, brings out some interesting features. All the clocks gained a little on the crystal in the morning and lost in the afternoon, the rates varying by about one three-thousandth of a second per hour. This was probably due to diurnal temperature changes in the signalling system, including the wire from New York. A somewhat smaller variation with a period just under 25 hours was pretty certainly due to the regular change in the force of gravity (which drives the clocks but not the crystal) as the moon passed around the earth. A third variation with a ten-and-one-half-day period is traced to the "beat" between the pendulums of two of the clocks, but how the effect was produced remains obscure. Apart from these periodic terms, the study shows that the maximum accumulated error of one clock, as compared with the others, was one-twentieth of a second a week. It appears that a group of four or more of such clocks, under proper controls, should furnish a standard of time measurement sufficiently dependable to reveal the annual changes in the rate of rotation of the earth.

SHAPE OF THE MOON

The moon turns the same side, in general, constantly toward the earth, but not exactly so. The circle that bounds the visible hemisphere moves to and fro on the lunar surface, so that its extreme positions enclose a band over a hundred miles wide around the moon. Any elevation or depression within this band will, from time to time, appear upon the moon's visible limb as a slight protuberance or hollow, but too slight usually to be easily observed. Whenever an observation of the moon's position is made with the meridian circle or transit, it is actually some point of the limb whose contact with the instrument-wire is observed, and an irregularity at that point will affect the measure of right ascension or declination. Conversely, analysis of a

long series of such measures, during which the visible limb has passed back and forth over a considerable area of the lunar surface, will reveal elevations and depressions as apparent errors, recurring as the irregularities present themselves recurrently at the limb. Such an analysis has been made by Dr. H. R. Morgan and Jesse Pawling of the U. S. Naval Observatory, embracing four thousand observations during eighteen years, and they have put their results into the form of a contour map of areas along the north, south, east, and west limbs of the moon, showing regions rising as high as a mile above the mean level of the moon, and other regions depressed below it as much as two miles. The validity of the map is attested by a striking agreement of its main features with results obtained by other observers, by direct measurement and the observation of occultations.

EROS

Except for the moon, the heavenly body that comes nearest to the earth is the minor planet Eros, whose eccentric orbit lies partly within and partly without the orbit of Mars. When Eros and the earth happen to be at the same time at the points of their orbits that are nearest to each other, the distance between them is less than fourteen million miles. So close an approach is rare; in fact, since Eros was discovered in 1898, it has not occurred once. In the winter of 1900-01 the planet came within thirty million miles of the earth, and this distance remained the record until the winter of 1930-31, when Eros came within seventeen million miles.

Such close approaches furnish the best opportunity for the measurement of the distance of a planet by direct triangulation. And in the solar system, where the relative positions of the members are known with great accuracy from gravitational theory, to measure one distance is to evaluate all distances. Accordingly, at the approach of Eros in 1901, the concerted efforts of observatories all over the world were directed to the measure-

ment of the little planet's exact position in space, and the results obtained were coordinated by Mr. Hinks of Greenwich Observatory, England, to furnish the value in miles of the "astronomical unit" (the sun's mean distance from the earth), as 92,900,000, with a probable error of one-twentieth of one per cent.

An attempt to better this value in 1931 seemed justified by the much smaller distance and the improvements of thirty years in methods of precise measurement. So through the winter and spring more than a score of observatories devoted a large part of their observing time to measurements of the position of Eros. Most of them observed by photography, though some series of micrometer measures were made. Two methods were used. In each, the actual measurement is of the parallax of Eros, the angle between the directions in which the planet is seen from the two sides of the earth. The first method is to observe the planet early in the evening, and again just before dawn, the rotation of the earth carrying the observer from one side of the earth to the other in the interval. The other method is to observe Eros simultaneously from two stations in opposite hemispheres. The directions are measured differentially, by comparison with stars that appear close to Eros, so it is necessary to know the directions of these stars with the greatest possible accuracy. Since most of them are faint and not included in existing catalogs of precision, a special program of star-position measures by meridian circle and camera was entered upon by a number of the cooperating observatories, which program is still in progress.

Among the American observatories that made extensive series of measurements of the parallax of Eros were Allegheny, Dearborn, Lick, McCormick, Van Vleck, and the United States Naval Observatory. Cincinnati, Lick, and the Naval Observatory made meridian circle observations of comparison stars. In general, each series is independent, and from it a parallax may be found by the first method. But many of the Amer-

ican observations were made at practically the same time as observations in South America and Africa, and these can be utilized according to the second method. The task of combining the work of the various observatories has been undertaken by Dr. H. Spencer Jones, His Majesty's Astronomer at the Cape of Good Hope.

At Harvard Observatory and the Maria Mitchell Observatory on Nantucket, observations were made of the brightness of Eros. At previous approaches it was found that the little planet varied its brightness in a regular period of five hours sixteen minutes. The range of variation was itself variable, at times exceeding a magnitude. In 1931 the same thing was observed. This is just what would be expected if Eros is not round but of irregular shape, rotating about an axis that at different times makes different angles with the line of sight. Eros is so small that it does not show a disc in the telescope; from its brightness its diameter has been estimated as less than twenty miles. The gravitation of such a body would be insufficient to enforce even approximately a spherical form upon it; an irregular form would be expected. In 1924 Inness and Wood at Johannesburg, South Africa, were pretty certain that they saw Eros elongated on one occasion, in a nine-inch telescope. To Van den Bos and Finsen, observing at the same place with a 26-inch telescope in February, 1931, Eros appeared definitely elongated on nine different nights, sometimes seeming to be of figure-eight shape, like a nearly-resolved double star. The line of the elongation rotated in just the period of the known light-variation. The appearance might be interpreted as that of an egg-shaped body perhaps eighteen miles long, or of two bodies, one a little brighter than the other, about twelve miles apart. The observations, even in the fine atmosphere of Johannesburg, were very difficult, and seem to have been paralleled nowhere else.

PLUTO

Examination of the collections of photographs of various observatories

has brought to light fifteen plates containing images of Pluto, the outermost planet, taken before its discovery in 1930; three of them were taken as early as 1914. A probable sixteenth pre-discovery position is given by an image on a Franklin-Adams plate of 1903. The latest orbit, based on these positions by Bower of Lick Observatory, will probably not need much modification for a long time. Bower has investigated the probable mass, as have Nicholson and Mayall of Mount Wilson and Crommelin of England; their results vary greatly, indicating that it will be very many years before the accumulation of perturbations makes a trustworthy direct approximation possible. Indirect estimation, from the brightness and reflecting power of the planet, assuming a reasonable density, gives a mass smaller than that of the earth. Such a mass seems quite insufficient to produce sensible effect on the motion of Uranus. But it was from analysis of the motion of Uranus that the orbit of Pluto was independently predicted by Lowell and W. H. Pickering, using different methods, and the close agreement of both predicted orbits with the true orbit is almost incredible as a purely chance coincidence. Opinion remains divided, therefore, as to the identity of Pluto with the theoretical planet of Lowell and Pickering.

COMETS

To the end of November, the year saw only two new comets, the fewest for many years. At the beginning of the year several were under observation, notably Stearns's giant comet (1927 IV)—still visible more than four years after discovery at a thousand million miles' distance—and Schwassmann-Wachmann's short-period comet of 1927, which showed sudden unaccountable fluctuations of magnitude, actually varying its brightness by a hundred-fold in a few weeks. During an examination of Heidelberg photographs of March, 1902, two images were found that are pretty certainly of this comet, taken twenty-five years before it was discovered.

No discoveries were made during the first five months. In June Encke's comet was picked up on its forty-third return since it was first seen in 1786. On July 15 a fruit-grower in California, Masani Nagata, found a seventh-magnitude comet while searching for Neptune with his three-inch telescope. On Aug. 10 P. M. Ryves, an English amateur in Zaragoza, Spain, found a naked-eye comet, which in a week rose to second magnitude, then faded again. Finally, Neujmin's comet (1913 III) was detected on its first return since discovery.

SUN

Internal motions in prominences at the sun's limb have been studied by Dr. Pettit of Mount Wilson, using the spectroheliograph and spectrohelioscope. In general the hydrogen and calcium in the prominences take part together in the repulsion that is the principal motion, and which is probably due to radiation pressure. But streamers of calcium are often attracted strongly to some points of the solar limb, while hydrogen is not, in any such measure. As the calcium observed is ionized, or electrically charged, while the hydrogen is neutral, an electrical attraction is suggested. Sometimes an apparent combination of attraction and repulsion tear the prominence to pieces between them, parts of it being blown outward from the center of force and other parts sucked in. The center is often in a sun-spot.

Dr. Bobrovnikoff of Perkins Observatory has investigated the general repulsion on calcium prominences, using observational material collected by Dr. Pettit. The velocities of repulsion are of the order of magnitude required by Milne's theory of the radiation pressure on ionized calcium atoms, and the observed acceleration of the calcium as it rises agrees approximately with the theoretical acceleration due to increase of the force with the velocity, as the Doppler effect alters the wave-length absorbed by the atoms. The acceleration shows abrupt changes, however, in most cases, as though "explosions" in

the prominences themselves gave additional impulses to the material. The same effect has been noted in the motions of comets' tails.

Sun-spots in 1931 were relatively infrequent and inactive, as was to be expected three years after spot maximum. In June the sun was observed at Mount Wilson to be without spots on ten days, seven of them consecutive, the longest spotless interval since 1925.

Three partial solar eclipses occurred, one visible in eastern Asia, one in Alaska, and one in southern South America. They were not observed by scientific parties.

BIGGER AND FASTER HEAVENLY BODIES

The spectroscopic binary star *HD 698* has been found by observers at the Dominion Astrophysical Observatory of Canada to have a mass 184 times that of the sun, surpassing by one-third the greatest mass hitherto known for a pair of stars. Mr. Humason at Mount Wilson has measured the radial velocity of a faint spiral nebula in Leo as 12,000 miles a second, nearly twice as great as any velocity previously measured. And a new variable star has been discovered by Dr. Van Gent of Johannesburg, South Africa, with the shortest known period,—one hundred minutes.

ROTATING STARS

The spectral lines of a body approaching an observer are slightly displaced, from their normal positions, toward the violet end of the spectrum; the lines of a receding body are displaced toward the red end. If the body is rotating, one side of it will be approaching and the other receding, and the lines will be shifted both ways, that is, broadened and made less intense. There are many other causes for the broadening of spectral lines, but rotational broadening differs from most of them in that it must affect all lines alike; and the contours of the lines will have a distinctive "dish-shape". The rotational velocities of heavenly bodies known to us directly are small, and their lines are not sufficiently broad-

ened for the effect to be certainly detectable in our spectroscopes.

Within the last few years several investigators, among them Dr. Struve and Dr. Elvey at Yerkes Observatory, have become convinced that the broad hazy lines, so common among the spectra of blue stars, are most easily explained by very rapid rotations of these stars, rotations almost sufficient to break them up into double stars, according to the theories of Sir George Darwin and Sir James Jeans. Now very close double stars are very common among the blue and white stars. There are a few of these that eclipse each other, so that at times one side of one star is covered by the other, and the other side is visible. At this time an actual shift of the lines of the eclipsed star will occur, if it is rotating, and the shift has been observed in several cases (it is much easier to detect than a change of the shapes of the lines). One of the cases is the brightest eclipsing star, *Algol*. Struve and Elvey have recently examined the widths and contours of the lines of *Algol* during eclipse, using the highest power of their spectroscope, and find that the lines show just the shapes that would be expected from the known rotation.

THE DEPTHS OF SPACE

A survey of twenty thousand extragalactic nebulae, or "island universes," in selected regions over three-fourths of the sky, has been made by Dr. Hubble of Mount Wilson. He finds that, except near the Milky Way, the nebulae are almost uniformly scattered through space, with occasional clusters of nebulae, out to the limit of observation; which is about 160,000,000 light-years out. There is one nebula, with a mass estimated as 500,000,000 times the sun's mass, in approximately every million million million cubic light-years of space. None of the nebulae appear in the Milky Way, presumably because the obscuring matter, which abounds there, cuts off outer space from our view in that direction. There is no sign of a thinning-out of nebulae, out to the limit of vision, but the limit

is only a small fraction of the theoretical "radius" of space.

PUBLICATIONS

Books.—*The Stars in Their Courses*, by Sir James Jeans (New York, Macmillan, 1931). A popular account of our knowledge of the heavenly bodies, more elementary than *The Universe Around Us*, by the same author, but equally vividly written. No better brief survey of present-day astronomy is obtainable. *Signals from the Stars*, by George E. Hale (New York, Scribner, 1931). Another volume of Dr. Hale's authoritative and fascinating essays on phases of modern astronomy. *Johann Kepler*, papers by various authors, issued for the tercentenary of Kepler's death, by the History of Science Society (Baltimore, Williams and Wilkins, 1931). Discussions of Kepler as astronomer, mathematician, and mystic, with a bibliography of his works.

The Stars of High Luminosity, by Cecilia H. Payne, *The History and Work of the Harvard Observatory*, by Solon I. Bailey (Harvard Observatory Monographs, Nos. 3 and 4, New York, McGraw-Hill, 1930 and 1931). Spectroscopic analysis of the stars has naturally reached its highest development in its application to those intrinsically brightest. Dr. Payne's book is not only a comprehensive summary of her subject to date, but a record of much original work of first importance. To set forth the story of one of the oldest and most important of American observatories no one was better qualified than the late Professor Bailey, with his long connection with Harvard Observatory and his clear fluent style. His book should appeal to a wide circle of astronomers and friends of astronomy.

Journals.—American observatories either maintain publications of their own, or publish their researches in such technical journals as the *Astronomical Journal* (Albany) and the *Astrophysical Journal* (Chicago), but summaries of their work appear each year in *Publications of the American Astronomical Society* (Princeton, N

J.), which contains also abstracts of papers read at the Society's meetings. Pacific Coast observatories and organizations publish also in the *Publications of the Astronomical Society of the Pacific* (San Francisco), and Canadian, in the *Journal of the Royal Astronomical Society of Canada* (Ottawa). Much amateur and some professional work, and many articles of general interest, appear in *Popular Astronomy* (Northfield, Minn.).

PERSONAL NOTES

Dr. W. W. Campbell, Director Emeritus of Lick Observatory and President Emeritus of the University of California, has been elected president of the National Academy of Sciences.

Director H. N. Russell of Princeton University Observatory has been elected president of the American Philosophical Society.

Director A. O. Leuschner of the Berkeley Astronomical Department of the University of California, has been elected president of the Pacific Division of the American Association for the Advancement of Science.

Professor H. H. Plaskett of Harvard University, son of Director J. S. Plaskett, of the Dominion Astrophysical Observatory of Canada, has been elected to the Savilian Professorship of Astronomy in Oxford University, England, the chair once occupied by Halley and by Bradley.

Professor Jan Schilt of Yale University has been made Director of the Observatory of Columbia University. In the midst of New York City, the Columbia Observatory cannot effectively carry on any program of extensive observation. Under Professor Rees and Professor Jacoby, important work was done on the theory of celestial measurements by photography, and measures were made of many plates taken elsewhere. Professor Schilt is inaugurating research in a different field, that of stellar statistics, a field in which many of the chief observatories of northern Europe, but too few of those in America, have made distinguished contributions.

XVIII. MATHEMATICS AND ASTRONOMY

To C. W. Tombaugh of Lowell Observatory, the discoverer of Pluto, has been awarded the Jackson-Gwilt Medal and Gift of the Royal Astronomical Society of London.

The Draper Medal of the National Academy of Sciences was awarded to

Dr. Annie J. Cannon of Harvard College Observatory.

The Bruce Medal of the Astronomical Society of the Pacific was awarded to Dr. Willem De Sitter, Director of the Observatory of the University of Leiden, Holland.

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

(For further information, the reader may address the following organizations)

AMERICAN ASTRONOMICAL SOCIETY,
University Observatory, Princeton,
N. J.

AMERICAN MATHEMATICAL SOCIETY,
501 W. 116th St., New York City.

MATHEMATICAL ASSN. OF AMERICA,
Oberlin, Ohio.

NATIONAL ACADEMY OF SCIENCES, B
and 21st Sts., Washington, D. C.
SCIENCE SERVICE, 21st and B Sts.,
Washington, D. C.

DIVISION XIX

ENGINEERING AND CONSTRUCTION

STRUCTURAL ENGINEERING

BY MILO SMITH KETCHUM

DEAN, COLLEGE OF ENGINEERING, UNIVERSITY OF ILLINOIS

BRIDGES

Toll Bridges.—The privately owned toll bridge during the past twenty years has experienced a complete cycle involving trial, promotion, attack and decline. The first large toll bridges made such an excellent financial showing that many large privately-owned toll bridges have been built where sufficient revenue has not developed to pay the interest on the bonds. The Ambassador bridge at Detroit, has not earned a sufficient revenue to pay interest on the bonds. The Longview bridge over the Columbia River has gone into receivership. The publicly-owned toll bridge financed by revenue bonds is gaining in favor largely due to the successful results of the building of the Philadelphia-Camden bridge and of the operations of the Port of New York Authority.

Hudson River Bridge.—The great suspension bridge over the Hudson River at New York, now officially known as the George Washington Memorial Bridge, was opened for traffic Oct. 25, 1931. This bridge, the longest in the world, has a length of main span of 3,500 ft., which is nearly twice the 1,850 ft. main span of the Ambassador bridge. It has two suspended side spans with spans of 650 ft. each. The main supports are two steel towers 588 ft. high from mean water to center line of cables. The main carrying members are four parallel wire cables 36 in. in diameter, two side by side on both sides of the towers. The present upper

deck is 106 ft. wide and is planned to carry ultimately eight vehicle lanes. For the present four traffic lanes are provided. The bridge will be constructed within the \$60,000,000 estimate made at the time it was financed. The future lower deck is to carry four rapid transit railway tracks.

Rope Strand Cable Suspension Bridge.—The St. Johns bridge at Portland, Oregon, is the largest suspension bridge in which rope strand cables have been used. It has a main suspension span of 1,207 ft. with two 430-ft. side spans. The two main cables are 16¾ in. in diameter and are spaced 52 ft. apart and support stiffening trusses 18 ft. deep. The roadway is 40 ft. wide between curbs, providing four lanes of traffic in addition to two 5-ft. sidewalks. Each of the 16¾-in. main cables consists of ninety-one 1½ in. galvanized wire strands, each strand consisting of fifty-one galvanized wires varying from 0.100 to 0.196 in. in diameter, giving an area of metal of 1.337 sq. in. in each strand. All wire was specified to be cold drawn and manufactured by the acid open-hearth process. Each main cable strand was specified to have an ultimate strength of 135 tons, an elastic limit of 200,000 lb. measured at 0.7 per cent elongation, and a modulus of elasticity of 24,000,000 lb. per sq. in. up to 50 per cent of the specified ultimate strength. A parallel wire cable will have a modulus of elasticity of nearly 27,000,000 lb. per sq. in. while a

steel wire rope under the first stressing has a modulus of elasticity of about 12,000,000 lb. per sq. in. By applying a load of 150,000 lb. per strand for one-half hour the "inelastic" stretch can be removed so that a modulus of elasticity of 24,000,000 lb. per sq. in. can be obtained. After the application of the 150,000 lb. load for one-half hour the load was decreased to 70,000 lb. (closely approximating the dead load stress), and the strand was cut to the proper length and socketed.

The main cables were erected from fixed ropes consisting of four 1-in. strands known as track ropes. Two track ropes 10 ft. apart served each cable. These track ropes supported steel cages placed at the center and quarter points of the main and side spans. The cages served as working platforms for erection and adjustment of the main cables. The movable ropes consisted of an upper 1-in. hauling rope and a lower $\frac{3}{4}$ -in. hauling rope, each forming a continuous loop serving both cables. The upper hauling rope was attached to the cages, while the lower hauling rope was used for pulling the strands across the river. The reel containing the strand was set in a reel stand near the east anchorage. To control the sag of each strand as it was hauled across the river, steel U-shaped guides were hung from the upper tramway rope at 120 ft. intervals and the bridge strand pulled through these guides. Each main cable was covered with wrapping consisting of No. 9 soft annealed double-galvanized steel wire. After wrapping, three coats of paint were applied to the cable.

Golden Gate Bridge.—The highway suspension bridge over the Golden Gate entrance to San Francisco Bay will be the longest bridge in the world. The main suspended span will be 4,200 ft. with two side spans of 1,125 ft. each. Its main span is 700 ft. longer and its side spans 475 ft. longer than the George Washington bridge over the Hudson River. The cables are $36\frac{1}{4}$ in. in diameter and are only slightly larger than the

36-in. diameter cables in the George Washington bridge. Only two cables are used in the Golden Gate bridge. Each cable will consist of 27,572 galvanized wires (0.192 in. in diameter) arranged in sixty-one strands. The cable sag is 475 ft., giving a span-sag ratio of 8.84:1. The suspenders consist of two $2\frac{7}{8}$ in. wire ropes which are spaced fifty feet apart and support the stiffening trusses. The towers are of steel unincased and are 699 ft. 8 in. tall from pier top to center of cables. The tower legs are fixed at the base and are spaced 90 ft. apart. The towers are designed for earthquake loads equal to about 7 per cent of the vertical loads.

San Francisco-Oakland Bridge.

—This bridge will be built under the Toll Bridge Authority created by the California legislature to facilitate the construction. The legislature passed three bills: (1) a \$650,000 loan from state funds for preliminary work; (2) adoption of the bridge as a part of the state highway system, which will provide for maintenance of the structure; and (3) amendments to the state Toll Bridge Authority to make the bonds more salable. Little progress can be made until the legality of the laws under which the bridge will be built are tested in the courts.

West-End Arch Bridge, Pittsburgh.—This bridge with a span of 778 ft. center to center of end pins is a two-hinged arch with a horizontal tie. The upper and lower chords follow a parabolic curve. This makes the stresses in the chords nearly constant for the full length of the bridge. The upper chord has a maximum area of 182 sq. in. while the lower chord has a maximum area of 214 sq. in. Silicon steel is used for the main members. The floor beams are spaced about 28 ft. centers and are supported by single twisted wire ropes, consisting of six strands and an all metallic independent wire rope center. The wire rope hangers were prestressed to obtain a minimum modulus of elasticity of 20,000,000 lb. per sq. in. The wire hangers vary from $3\frac{5}{8}$ to 4 in. in diameter. The tie consists of two parallel groups of

silicon steel web, eight plates in all, with an area of 250 sq. in. Diaphragms are used at intervals of 7 ft. along the ties. The bridge has a clear roadway of 40 ft. between curbs and two 5-ft. sidewalks. The bridge was erected and swung as three hinged arches, which were converted to three hinged arches under the steel dead load.

McKees Rocks Arch Bridge.—The main span of the steel bridge over the Alno River at McKees Rocks, Pa., is a steel arch with a span of 750 ft. long center to center of pins. It is of the spandrel braced type, 25 ft. deep at the crown and 106 ft. deep at the ends. The bottom chord of the arch is a box section of silicon steel with a maximum section of 251 sq. in. and a depth varying from 54 in. at the pin to 34 in. at the center. The upper chord members are silicon steel except the two end panels which are carbon steel. The web members are partly of carbon steel and partly of silicon steel. The bridge has a clear roadway of 40 ft. and two 5-ft. sidewalks. The bridge was erected as a three-hinged arch and was converted to a two-hinged arch under normal temperature and steel dead load.

Kill van Kull Arch Bridge.—The Kill van Kull arch bridge connecting Staten Island and Bayonne, N. J., was formally opened for traffic Nov. 15, 1931. With a span of 1,675 ft. it is the longest arch span in the world. Carbon manganese steel was used for the main stress carrying members and for the $1\frac{1}{4}$ in. field rivets.

Longest Lift Span Bridge.—The new highway bridge across the Delaware River between Burlington, N. J., and Bristol, Pa., includes a lift span 533 ft. 9 in. long. This is the longest lift span in the world. The weight of the span has been reduced by the use of silicon steel and by the use of a light weight floor made of shallow beams and checkered steel plates. While the steel plate floor was estimated to cost \$12,000 more than the next cheapest fireproof floor, the light weight of the floor effected

a saving of \$42,000 in the entire structure.

Bridge Clearances.—The building of bridges over navigable bodies of water has been seriously handicapped by the action of the War Department in making extreme requirements for bridge clearances. Within recent years these clearances have varied from 135 ft. for the Philadelphia-Camden bridge, to 193 ft. for the Columbia River bridge at Longview, Wash.

Long Span Plate Girder Bridge.—The high level suspension bridge now being built over the Maumee River at Toledo, O., has a 154-ft. deck plate girder span in the approach crossing the railroad tracks. The two girders are 153 ft. $10\frac{1}{4}$ in. long, 12 ft. 1 in. deep and weigh 168,000 lb. each. Both flanges consist of two 8x8x1 $\frac{1}{8}$ -in. angles, two 12x $\frac{5}{8}$ -in. side plates and four 19-in. cover plates. The web is 138 in. deep and 9/16 in. thick and is stiffened with 6x4 in. and 6x3 $\frac{1}{2}$ in. angles.

REINFORCED CONCRETE BRIDGES

Freyssinet Arch.—The first bridge to be built in this country using the Freyssinet method of reinforced concrete arch construction is nearing completion over the Rogue River in Oregon. It consists of seven 230-ft. open-spandrel type arches. The arches are decentered by means of crown jacks and the subsequent stresses are adjusted. By raising the arch ring off the centering by the hydraulic jacks the arch will be able to take the load without settlement or flexure and compensation may be made for temperature, shrinkage and elastic rib shortening. The total cost of the structure is \$568,181, which is estimated to show a saving of \$59,450 by the use of the Freyssinet system.

Longest Concrete Arch Bridge.—The 460-ft. span reinforced concrete arch in the Westinghouse bridge at East Pittsburgh, Penn., will, when completed, be the longest span reinforced concrete arch bridge in America. The bridge is of the spandrel

braced arch type with a center rise of 155 ft. 6 in. and a clear span of 411 ft. 5 in., the distance center to center of piers being 460 ft. Two ribs with a width of 14 ft. were used, each arch ring having a depth of 5 ft. at the crown and 19 ft. at springing line. The ribs were designed for a maximum working stress of 800 lb. per sq. in. under combined dead load, live and impact load, rib shortening and temperature stresses, this working stress being based on 2,000-lb. concrete. The bridge was designed for a uniform load of 975 lb. per lineal foot, and in addition a concentrated load of 102,000 lb. were used on each rib. Temperature stresses were calculated for a drop of 40 degrees and a rise of 60 degrees F. The bridge has a 42 ft. roadway and two 5 ft. sidewalks. The entire bridge is 1,500 ft. long and consists of five arch spans varying in length from 196 ft. 4 in. span to 460 ft. span between centers of piers. The contract price of the bridge was \$1,453,000, not including the cost of the pavement which will cost \$87,000.

Concrete Bowstring Arch Bridge.

—The Oregon Highway Commission is building a reinforced concrete arch bridge of unique type over the Wilson River. The structure consists of a pair of reinforced concrete ribs with a span of 120 ft., carrying a suspended reinforced concrete floor slab acting as a tie, thus converting the entire structure into a two-hinged arch supported on vertical piers. The arch rings have a center rise of 36 ft. and are 3 ft. 6 in. wide by 2 ft. 8 in. thick at the crown and 3 ft. 6 in. thick at the springing. Arch reinforcing consists of sixteen $1\frac{1}{2}$ square bars per rib. The arch ribs will be erected with a center hinge which will be filled in after erection.

BUILDINGS

Tall Steel Buildings.—The depression has brought a new influence to bear on the building of tall steel buildings. Recent surveys have shown that many of the recent tall buildings do not show an occupancy of more than 25 per cent, and numer-

ous tall buildings have failed to earn the interest on the building bonds. In several cities recently built hotels have gone into the hands of a receiver due to the depression. The financial success of the tall building as compared with a building of moderate height is still an open question. Considerable progress has recently been made in developing lighter floors, partitions and walls, which may have a very important influence on the cost of tall buildings.

Stresses.—During the past year a large number of books and articles have been written proposing new and more accurate methods for the calculation of the stresses in tall buildings. While some of the proposed methods are a definite addition to the art of design, in many cases the author has failed to appreciate the fact that the tall building frame contains many uncertain elements and that the results obtained from any method of calculation can at the best only be aid to the judgment of the designer. It should be remembered in this connection that no new method of analyzing the stresses in a structure can be used with confidence until it has been tested in practice or by experiment. Meantime, the action of the large number of tall buildings in this country will, as the years go along, make a very definite contribution to our knowledge of the design of these structures.

Windowless and Noiseless Factory Building.—A factory building designed with special regard to effective interior lighting, ventilation, temperature, noise reduction and other features giving better working conditions, has recently been constructed at Fitchburg, Mass., for the Simonds Industries, makers of gears and tools. This factory is a one-story structure 360x560 ft. with welded steel frame and brick exterior walls, but with no interior partitions. The outside walls and the roof contain no windows, the building being lighted with artificial light. For the interior lighting system there will be 500-watt lamps mounted about 18 ft. above the floor and fitted with diffusing

shades, so as to give a uniform intensity of 20-ft. candles at the level of the working plane throughout the building. For improved visibility the machines will be painted an orange yellow color.

The ventilating system will provide for delivering 50,000 cu. ft. per minute of washed, filtered and tempered air. In cold weather the air will be warmed, while in hot weather the air will be cooled. The walls, floors and ceiling are specially constructed to make the acoustical properties of the interior of the building as silent as possible. The walls are lined with sound absorbing acoustical blocks with a brick outside facing. The roof is a deck of perforated metal plates covered with $1\frac{1}{4}$ inches of rock fiber in asphalt, two $\frac{1}{2}$ -in. layers of insulating boards laid in asphalt and a top layer of built-up waterproofing. The floor is wood block laid on a concrete base. The machines have foundations isolated from the floor and are cushioned by cork pads. The walls and roof have been painted with a combination of blue, green and white, while the machines have been painted orange yellow to improve the visibility of the machine parts.

DAMS

Hoover Dam.—The contract for the Hoover dam, formerly called the Boulder dam, was awarded on March 4, 1931 to the Six Companies, Inc. for the contract price of \$48,890,995. The Six Companies, Inc. is made up of the Utah Construction Company, McDonald & Kahn, Morrison-Knudson, J. F. Shea & Company, Pacific Bridge Company, and Henry J. Kaiser and W. A. Bechtel. Two other companies bid \$53,893,878 and \$58,653,107, respectively. The low bid is said to be within \$200,000 of the estimate of the engineers of the Bureau of Reclamation. Excellent progress has been made by the contractors in organizing the work, in building the camp, the railroad and in driving the outlet tunnels.

Arch Dam Analysis.—The Hoover dam which will be the highest dam in the world has required more accu-

rate methods of design than has been necessary for arch dams of moderate height. A very successful method of calculation which has been developed by engineers of the Bureau of Reclamation, is known as the trial-load method. In this method of analysis the arch is assumed to be replaced by a series of horizontal arches and a series of vertical cantilevers. Each arch and each cantilever may deform independently of the remaining arches or cantilevers. In the initial stage the vertical component of the water is assigned to the cantilevers, and the horizontal component of the water load is divided between the arches and the cantilevers in such proportions that the arches and cantilevers will have a common component of deflection at each point. In the later stages of the analysis corrections are made for twisting moments, tangential shearing stresses and Poisson's ratio. This method of design has been applied to both arched and gravity structures including the Gibson, Owyhee, Stewart Mountain and Hoover dams.

Ariel Arch Dam.—The Ariel Dam of the Inland Power and Light Company on the Lewis River in Oregon provides for a 220,000 acre-foot reservoir. The structure is of the thin-arch type, 313 ft. high with a crest of 683 ft. long in the arch portion and with one gravity abutment. The arch was designed by the trial-load method, using a 600-lb. maximum stress. To reduce heat generation and resultant shrinkage stresses the dam is being built in 30-ft. sections separated by 2-ft. spaces which will be filled six months after the pouring of the concrete in the main section is completed. The dam contains 300,000 cu. yd. of concrete, including 95,000 cu. yd. in the gravity section.

Big Tujunga Arch Dam.—The big Tujunga arch dam which has recently been completed provides the initial unit in a flood-control plan of the Los Angeles County Flood-Control District. The structure is a variable-radius type concrete-arch dam, 240 ft. high with gravity abutments. The spillway is built into the struc-

ture and is designed for a runoff of 400 sec.-ft. per sq. mile of catchment area. The central section was designed as a variable-radius arch dam of 240 ft. maximum height and 400 ft. crest length. The upstream radii vary from 190 ft. at the crest to 120 ft. at the base, and the corresponding arch thicknesses are 8 and 73 ft. The arch was designed using Cain's formula. Temperature stresses and cantilever action were disregarded. The gravity abutments were designed for full arch thrust. An uplift of 50 per cent was taken under the north abutment and 100 per cent under the south abutment. The dam contains 83,000 cu. yd. of concrete and the total cost was \$900,000.

TUNNELS

Hetch Hetchy Tunnel.—The twenty-eight and one-half mile tunnel which will bring the Hetch Hetchy water supply to San Francisco is being driven from fourteen headings. The tunnel will have a diameter of 10½ ft. and a capacity of 350,000,000 gallons per day. The ultimate plan proposes a similar parallel tunnel 175 ft. south of the present tunnel when an increased supply is necessary. The tunnel is being driven through much bad ground which has required timbering. The interior will be lined with concrete.

Tunnel Driven in Plastic Clay.—

—An average progress of 20 ft. per heading for each ten-hour shift was maintained in driving with shields a 21-ft. concrete block-lined water tunnel 12,000 ft. long between the River Rouge and the Ford Motor Company's Dearborn plant in Detroit. The tunnel has an inner lining of 18 in. of monolithic concrete inside an 18-in. concrete block lining. The tunnel was driven through soft clay requiring bulkheads in the shields to prevent the plastic clay headings, carrying an overload of 60 ft. or 6,000 lb. per sq. ft. from flowing into the tunnel. Twenty 10-in. hydraulic jacks were used in driving the shield. An average shoving pressure of 3,600 lb. per sq. in. in the twenty jacks exerted a pressure of eight tons per

sq. ft. on 363 sq. ft. of tunnel face. Four 12x12 in. openings were used in the bulkhead of each shield through which clay was forced in a continuous prism during the shove, which required about forty-five minutes, and gave a velocity of 5 ft. per minute for the clay prism. The concrete blocks were 30 in. wide which required the removal of 32 cu. yds. of clay for each shove. The standard concrete blocks were 6 ft. 5½ in. long, 18 in. thick and 30 in. wide. One complete ring consists of nine equal size blocks and two half size blocks.

Steel Lining for Pressure Tunnels.—The Colorado River Board has recently recommended to the Secretary of the Interior that the pressure tunnels of the Hoover dam be lined with steel plate. When the reservoir is full the head of water on the pressure tunnels will be 560 ft. or 240 lb. per sq. in. In addition to this static-head pressure the tunnels will be subjected to an impact or surge pressure whenever the moving mass of water is suddenly retarded by the gates at the power house.

New York Aqueduct Construction.—The twenty mile Yonkers-Brooklyn tunnel to bring water to New York City is rapidly nearing completion. The excavation diameter is from 19 to 25 ft. and its depth varies from 380 to 780 ft. below the surface. The finished tunnel varies from 15 ft. to 21 ft. in diameter.

New Hudson Vehicular Tunnel.

—Bills have been passed by the states of New York and New Jersey authorizing the construction of a Midtown Vehicular Hudson tunnel at a cost estimated at \$96,000,000. The recent legislation declares it to be the policy of New York and New Jersey to treat as a single problem provision of all highway facilities within the port district. To this end all existing and future tunnels and bridges are to be under the unified operation and control of the reorganized Port Authority.

FOUNDATIONS

Mid-Hudson Bridge Caissons.—

The reinforced concrete and steel

caissons used for sinking the foundations of the Mid-Hudson River bridge at Poughkeepsie, N. Y., were the largest and deepest that have ever been placed. Each caisson consisted of a concrete-filled steel cutting edge and truss system 60x136 ft. and 20 ft. deep, with semi-circular ends, composed of an outer shell of $\frac{1}{2}$ -in. steel plate and heavy steel bracing trusses all filled and encased with concrete to form outer walls $3\frac{1}{2}$ ft. thick and partition walls $2\frac{1}{2}$ to 3 ft. thick. Above the cutting edge the reinforced concrete was jacketed with 4-in. timber. The caissons when completed each weighed 19,000 tons and were sunk 135 ft. to a gravel stratum. The west caisson was sunk without difficulty. When the east caisson had reached a depth of about 60 ft. it partially overturned. The caisson was righted and sunk to its final place after fifteen months of skillful work.

Open-pit Foundations.—The foundations for the City Bank Farmers Trust Building in New York City have been sunk by the open-pit method. Until four or five years ago it was believed that foundation piers could be sunk through deep water-laden sands and silts of lower Manhattan Island only by the pneumatic process. The foundation consisted of a system of pier wells put down by sinking open shafts in conjunction with drainage. The essential element of sinking foundations in open-pits is ground water drainage.

Foundations in a Swamp.—In building the roadway for the Public Service electric railway line through a peat bog across the New Jersey approach to the Hudson River bridge it was found that piles were not stable and were useless. The bog was dried up by pumping through well points driven to rock which was at a depth of 25 ft. The well points were spaced 3 ft. apart along two headers. They soon dried up the bog so that the bog material could be removed with a clam shell dredge. The excavation was filled with clay which was thoroughly rolled before placing the roadway.

GASHOLDER

A waterless non-telescoping gas-holder with a 20,000,000 cu. ft. capacity has recently been constructed for the Peoples Gas, Light and Coke Company, Chicago, Illinois. This gasholder is believed to be the largest gasholder ever built. The tank of this holder is 280 ft. in diameter and 373 ft. high to the bottom of the roof trusses. The tank is not cylindrical but is a 28-sided polygon and is covered with a slightly domed steel roof on steel trusses. Within the tank is a structural steel diaphragm or piston, having a rim formed as an annular triangle, which is filled with tar as a seal confining the gas to the space below the piston. The piston which weighs 1,612 tons, including the tar and 10,000 concrete blocks, floats on the gas, rising and falling as the content of the tank varies. The total weight of the steel in the gasholder is 5,000 tons. A special tar with a thickening point of five degrees below zero is used with a sufficient depth to seal the piston and overcome the gas pressure below. The gas pressure is 10 in. of water or 0.36 lb. per sq. in.

WELDING STRUCTURAL STEEL

The recent report covering 200 pages of the Structural Steel Welding Committee of the American Bureau of Welding is a distinct contribution to our knowledge of welding steel structures. The report indicates that so far as stresses are concerned present practice is safe providing the welding is done by competent operatives. Bending stresses should be avoided by eliminating eccentric conditions at the joints. No results were obtained that would justify different working stresses for welds of different sizes. Fillet welds placed transversely to the line of stress were shown to be 35 per cent stronger than those that were parallel. No harmful effects on the base metal from welding heat were disclosed. All fusion welding processes displayed equally good results. Stringent qualifications for the welding operators was shown to be absolutely necessary. The welds made by thirty-nine fabrica-

tors varied at the most only 12 per cent from the average strength obtained by all the fabricators. The report of the committee suggests the following fields as desirable for further research: (1) welds of greater cross-section, (2) welds of shorter length, (3) butt welds in shear, (4) diagonal butt welds, (5) slot welds, (6) welding on flame cut edges, (7) welding on other grades of steel, (8) tests of full-sized structural joints, (9) impact and variable stresses, and (10) welding on members under stress.

EARTHQUAKE RESISTANT CONSTRUCTION

The Board of Fire Underwriters of the Pacific have adopted a horizontal ground acceleration of one-tenth gravity for the design of tall buildings. This is the factor adopted in Tokio, Japan, and would appear to represent current good practice. While this earthquake requirement does not greatly increase the cost of low buildings a recent calculation for a thirty-story building 100 ft. square in plan, shows an increase of 77 per cent in the steel tonnage over that required to take the loads and a 20 lb. wind and an increase in the total cost of the building of nearly 8 per cent.

ENGINEERING RESEARCH

Dead Weight Reduction.—Considerable progress has been made in reducing the dead weight load of buildings and bridges. The decrease in the dead load of the floors of movable bridges and long span bridges has in many cases resulted in a large saving in the cost of the structure. The decrease of the dead load weights of the floors, walls and partitions of tall buildings will materially reduce the total costs of structures.

Wind-pressure Tests on Tall Buildings.—Tests are being made to determine the wind pressures on the Empire State building, New York's tallest structure. The Bureau of Standards in Washington is also carrying on wind pressure tests on a model of the Empire State building,

constructed on a scale of 1 to 250, which makes the model 5 ft. high. This model will be tested in a wind tunnel following a method similar to the tests recently completed by the Bureau of Standards on the model of a mill building. Engineers experienced in the design of buildings and other structures to resist actual wind pressures have questioned the value of the results obtained thus far from the tests of models in a wind tunnel. The air conditions in the wind tunnel do not even approximately represent the actual wind conditions, in which the air pulsates with eddies and whirlpools and presents a turbulent flow somewhat similar to the turbulent flow of water over a rapids in a stream. While the Pitot tube gives reasonable results for surfaces at right angles to the direction of the wind the results obtained on surfaces not parallel to the direction of the wind do not appear to be consistent. Since the laws of the flow of air and water are the same with the exception of the constants, it would appear that much information as to the pressures of the wind might be obtained by tests on models in a moving stream of water. Due to the difficulties of the problem it is not probable that direct experimentation on actual structures or on models will give results that will be as valuable for design as those loads specified by engineers who have had a long experience in designing structures to resist wind pressures.

Model Tests for a Suspension Bridge.—Tests on suspension bridge models for the proposed San Francisco-Oakland bridge are being made by the California Toll Bridge Authority in the materials-testing laboratory of the University of California. The investigations include the construction and testing of several accurate models on a 1 to 100 scale of the 9,000 ft. main crossing. The models are made of cold drawn wire and rolled steel identical with the material that will be used in the bridge. This work is being carried out under direct supervision of Pro-

fessor G. E. Beggs, Princeton University, who made similar tests last year on a model of the Mount Hope bridge. The model investigation is under the general supervision of Professor R. E. Davis, Director of the Laboratory.

Reinforced Concrete.—The investigation of the strength of reinforced concrete columns now being carried on at the University of Illinois and at Lehigh University, with the coöperation of the Portland Cement Association, has yielded very important results. Progress reports of these investigations have been published by both Universities. The coöperative investigation of concrete and reinforced concrete arches between the U. S. Bureau of Public Roads, the Engineering Foundation, the American Society of Civil Engineers and the Engineering Experiment Station of the University of Illinois has made excellent progress. The tests are being made on a single span reinforced concrete arch rib. The plan contemplates tests of three continuous arch spans with elastic piers.

Light Weight Reinforced Concrete.—Research investigations recently completed at the University of Illinois on the strength of concrete using Haydite and other light weight aggregates shows a material saving in weight of concrete without seriously decreasing the strength. Light weight concrete made with a porous aggre-

gate makes walls and partitions with excellent accoustical properties.

Riveted Joints.—Tests on riveted joints in plates 60 in. wide have recently been completed in the Engineering Experiment Station of the University of Illinois. The plates all failed through the widely spaced stitch rivets and not through the net-section of the plate.

Reinforced Brickwork.—Tests have been made by the U. S. Bureau of Standards to determine the strength of beams and columns made of brick and reinforced with reinforcing steel. While the investigation has not been completed the tentative results would indicate that reinforced brickwork construction will compare favorably with reinforced concrete construction.

Built-up Timber Columns.—The Forest Products Laboratory has recently completed a series of tests of timber columns built up by nailing or bolting small dimension timber together. While none of the built-up columns gave strengths equal to the strength of the solid stick the average strength was 75 per cent with individual columns of some designs reaching 90 per cent of the strength of solid timber columns. Tests will be continued on the two most promising types: (1) the solid core boxed with planks, and (2) the laminations. Tests will also be made on columns having the sticks glued together.

MECHANICAL ENGINEERING

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and

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INTRODUCTORY

Depression Influences.—The year 1931 in the field of mechanical engineering has been varied. The slow-down of the industries so common throughout the country has of necessity affected this field of engineering.

but not to the same extent throughout. In some fields there has been a notable restriction of activities. In some, however, there has actually appeared a resuscitation of research. This latter was particularly evident in those branches of mechanical engi-

neering which work for other industries; such as, machine tools, iron and steel and internal-combustion engineering. There has been a general feeling throughout the industry that the present depression will have the result of making competition sharper than it has ever been before. While the plants have been working at only a third of their capacity, the management has had time to look into the operation of their mills and factories and have found many places where better equipment and better methods of operation can do good. The result is that while they are not buying new equipment, they are ready to do so as soon as the business barometer begins to show steady fair weather. The industries which are making such equipment are, therefore, working intensively to be ready for the coming revival. In many cases they do not tell much about what they are doing so as not to afford, as one manufacturer remarked, "free education to their competitors," but more progress is being made than would appear on its surface.

Tendencies.—On the whole, the last two years have been notable in all branches of engineering by a tendency on the part of the management and operating staff to get away from "guess and hunch," and to base their operations on measurements. It is because of such a tendency that we find in power plants indicators showing the condition of draft in each pass of the boiler. In steel mills, pyrometers have been placed on the checkerwork of open hearth furnace regenerators, and the day is not far off when the gas reversing valves on these furnaces will be automatically controlled by thermostats. The attention now being paid to checking fuel consumption has already brought about a most important tendency upon which we shall comment in the proper place in this article. There is no question that if the industry does not become richer out of the turbulent conditions through which it is passing, it will certainly come out wiser. In the preparation of this section, extensive use has been made of

the annual progress reports of the Professional Divisions of The American Society of Mechanical Engineers.

STEAM POWER GENERATION

Increased Pressure and Temperature.—The year has been marked by the initial operation of power generating equipment utilizing the highest steam pressure and the highest steam temperature so far attempted in this country, and probably the outstanding recent development is the widespread increase in throttle steam temperatures. At least one station is now in operation with the maximum operating temperature of 850° F., while two mercury vapor installations now under construction will operate at temperatures in excess of 900° F. One station is getting ready to operate at 1000° F. An industrial plant started operation this year with the highest steam pressure ever used in this country, namely, 1800 lbs., and a boiler manufacturer has operated a coil-tube boiler experimentally at 3500 lb. pressure. It is only, of course, the recent development of steels capable of retaining a large share of their strength at elevated temperatures that made such progress possible.

Two-Fluid Cycles.—Both in this country and abroad increased attention has been paid to the so-called two-fluid cycles. There has been a revival of interest in mercury vapor boilers, generating water vapor in the mercury condensers. Two installations each of 20,000 k.w. capacity are under construction. Diphenyl Oxide has been tried as a substitute for mercury, but it is for only air heating equipment that this type has been developed.

Boiler "Outage."—One remarkable feature of modern power plants has been established by the investigation of the Prime Movers Committee of the National Electric Light Association. There is a remarkable reliability of this machinery as the average of "outage" (when the machinery was out of order) for last year was the lowest yet reported; namely, 9.37%. One plant reported that their

large boiler has been generating steam continuously for thirteen months with no indication that operation could not be continued indefinitely.

Fuel Consumption.—The downward trend of fuel consumption per unit of power generated continues not only due to those advances, but also by the close control of operating expenses. There has also been an increase in use of waste material fuels, such as blast furnace gas. The use of natural gas was increased, while low prices of oil, together with high freight rates of coal, have combined to cause the conversion of numerous power plants from coal to oil. Powdered coal is continuing to make progress and there is an increasing understanding of the mechanics of its combustion. In one big mill the pulverizing plant is nearly three-quarters of a mile away from the furnace, the coal being delivered by a pipe line. Still longer pipe lines for powdered coal are being considered.

Generating Capacity.—As regards turbo generators, the outstanding development has been the increasing use of high speed for relatively large machines. Several units of 10 and 15,000 k.w. capacity have been installed in this country to operate at 3600 r.p.m. In Europe much larger machines are in operation at 3000 r.p.m. including one of 50,000 k.w. and one 60,000 k.w. capacity. Research on condenser tube corrosion, which for a long time has been a disturbing factor in the operation of power plants, continues, but the problem is not solved. Arsenical copper is a new alloy for which unusual corrosion properties are claimed. In Europe an inverted type of condenser has been placed on the market. Another new development is the operation of steam jet vacuum pumps at full boiler pressure.

Engine Types.—The steam engine in this country has not had the renaissance which was claimed for it. It has been more extensively applied in Europe, particularly where the part of the steel is used for process purposes. A new type called "Monocompound" has been successfully

tested. In this type two cylinders are used with a single piston, however. Another new type of engine has been described in England. With this type the expansion of thin films of liquids, such as water, is used instead of the expansion of steam with somewhat remarkable results. Fifty years ago Sir Frederick Bramwell, then President of the British Association, read a paper in which he predicted that the steam engine, at that time the only important source of power, would be relegated to museums only, while the gas engine would become the prime mover par excellence. At the same time he established a little fund to provide for a lecture, and the lecture was delivered before Section G Engineering of the British Association by Sir Alfred Ewing. Bramwell's prediction has not been fulfilled, of course, for the reason that the steam engine obtained a new lease of life by becoming a turbine, while certain factors imposed the limitation on the large gas engine. Both have had tremendous development in the past half century. Steam has become the source of power when generated in large bulk as well as by far the greatest source of energy for rail transportation. The gas engine grew slowly but is rapidly expanding now through extensive availability of natural gas delivered by pipe line. The internal-combustion engine has become a veritable giant and controls land transportation other than by rail, and air transportation, together with a growing influence on water transportation and certain forms of power generation. A radically new type of prime mover has been demonstrated in England. In this machine, built somewhat along the lines of a steam engine, steam is replaced by water in thin films, and the piston is moved by the expansion and contraction of the liquid as it is being heated and cooled.

OIL AND GAS POWER

Marine Engines.—The tremendous importance of the internal-combustion engine, particularly in the

transportation field, has been well recognized. Land and air motor transportation would not have been possible without it, and water transportation is greatly affected by its developments. While in the past year there have been few great novelties, there has been no lack of minor improvements. Development of the coal-dust Diesel engine is continuing. Recently a European concern converted several oil engines, including a vertical two-cylinder unit of 100 hp. to coal-dust operations. In marine oil engines, the most noticeable trend is towards the use of high speeds, which is a departure from the practice of only a short time ago. The outstanding construction of the year is the passenger liner motor ship *Victoria* to operate on the Triest-Alexandria run. It has four engines and a total b.hp. of 17,000, and on trial attained a speed of 23.25 knots. A still bigger ship, the *Reina del Pacifico*, carries 22,000 b.hp. in four supercharged engines. Some very amazing figures for weight per hp. and engine power are cited in connection with the light cruiser *Deutschland*, recently launched in Germany. They are not quoted as their reliability could not be checked. The application of the oil engine to automotive work has developed to the point where it may be considered as commercially established for certain fields.

Oil Engine in Aviation.—The progress of its application for aviation is continued. In the United States some useful work along this line is being done by the Navy Department. In Europe a number of companies are working along this line and resorting to unconventional designs. The opposed-piston principle for example is utilized in the Junkers aircraft engine which is said to develop 650 hp. at 1500 r.p.m. and a total weight of 2.85 lb. per b.hp. In the Jalbert engine under construction for the French Air Service, a separate fuel-compression cylinder, mounted on each working cylinder, is used to compress a rich fuel mixture, which is then injected into the working cylinder. The greatest stumbling block to universal

application of oil engines in aviation is the comparatively heavy weight, probably due to the much lower speeds. The most important research projects in this country are being carried on by the Fuel-Oil Research Committee, the Pennsylvania State College, the Navy Department and the National Advisory Committee for Aeronautics.

Gas Turbines.—Earnest work is continuing on the illusive problem of the gas turbines. The Lorenzen turbine attempts to solve the problem of high temperature conditions in the metal parts by the use of hollow blades through which air flow is induced. Another gas turbine has been invented by G. Bertin and tested at the speed of 5,250 r.p.m. It may be also used as a tool compressor.

MACHINE TOOLS

Design.—The most important influence effecting machine tool design in the past year has been the development of new cutting materials. Tungsten carbide has been referred to in a previous issue of THE AMERICAN YEAR BOOK. In the past year several new materials of the same kind have appeared and particular mention may be made to tantalum carbide and mixtures of tungsten carbide and tantalum carbide. This extended the application of these materials to steel. Because of the ability of these new cutting materials to cut deeper and faster than was previously the case, a drastic re-design of the machine tools became necessary. On the whole, there has been an enormous amount of machine tool development under way, but little of it has been disclosed. One of the features of modern design is the extensive use of welded steel parts built up from plates to replace castings of large members of machine tools.

Vibration.—Further developments have been made in the methods of analyzing and eliminating excessive vibration. In addition to several types of balancing machines, there have been developed several types of lighting equipment where the light is interrupted in such a way that the

object studied while rotating at high speed appears as if it were standing still.

The Photo-electric cell is also finding extensive applications. Thus steel bars as they come from the rolling mill are measured to length and cut off by machinery controlled by the photo-electric cell.

Milling-machine design and practice have made a particularly great advance, primarily due to the introduction of tungsten carbide tools. In the past neither the speed range nor the feed range have been adequate even for standard high speed steel cutters, and milling machines were lacking in rigidity. Recently machines appeared on the market, however, with the range of spindle speeds from 15 to 1500 r.p.m. and the range of feed from $\frac{1}{4}$ in. to 60 in. per min. Machines feeding up to 100 in. per min. are available. An important improvement in dividing heads and milling machines has been made, reducing the indexing time to one-eighth of what it has been before. Moreover, the dividing head indexes all consecutive numbers up to 500, and has change gears and driving mechanism to cut more than 40,000 different leads, as fine as 38 threads per inch and up to a lead of 240 ft. per turn of the spindle.

Labor Saving.—The effort of machine tool builders to reduce the consumption of labor per piece output has affected associated industries, and, for example, forged units are being brought nowadays so close to the finished size that former necessary intermediate turning operations have been completely eliminated, and the piece is simply passed directly to the grinding machine for sizing. Then a precision grinding machine has been developed for grinding four surfaces simultaneously on the axle shaft of a certain make of car. In addition to this automatic loading and unloading facilities have been incorporated as an integral part of the machine. An entirely automatic line of machines has been developed for centerless grinding of piston rings with the total tolerance of diameter not exceeding

0.0002, this notwithstanding or perhaps because of lack of manual control of the operations. Indeed, part of the responsibility for the extremely small tolerances which are becoming standard in modern machine shop operations is due to modern provision of automatic size control which has now been extended to both internal and external operations.

MOTOR CAR ENGINEERING

The Clutch.—The most radical improvement in motor cars has been the introduction of free wheeling. This led to a close study of automobile clutches and particularly the centrifugal clutch. The vacuum operated clutch as a substitute for the mechanical type of free wheeling has also been given serious attention. Within a few years cars will be available without clutch pedals or gear shift levers.

Industrial Readjustment.—The automobile industry as a whole has been going through a drastic readjustment. At the New York Show of 1930, the eight-cylinder type was so prominent as to make one believe that it will become predominant in the industry. Since then, however, the restriction of the purchasing power of the public compelled several companies to return to cheaper types, while one builder of eight-cylinder cars placed on the market an unusually low-priced unit in that class.

REFRIGERATION

There has been no radical development in this field except the appearance of a machine for producing refrigeration by electrolysis. This apparatus seems to be as yet in the development stage. On the other hand, the domestic refrigerator continued its triumphant march, and during the past year serious attention has been directed towards the possibilities of central station refrigeration; that is, supplying refrigeration, for example, to a group of city blocks from one central place just as steam is now supplied. The air conditioning of equipment on the railroads, which was started in 1930 with two dining cars,

has been greatly extended and applied to Pullman cars as well. The sale of precooled meats has not made any very startling progress during the past year, however.

TEXTILE INDUSTRY

Unlike other mechanical industries, the textile plants, up to two years ago, had not done much development work. There is, therefore, a certain virgin field there for engineers, and the mills, while they do not like to spend money for equipment in times like the present, have been to a certain extent forced to do so by the grim logic of events. Among the developments may be mentioned several new types of high-speed automatic looms for the manufacture of cotton and worsted fabrics. In Germany a compound drafting spinning frame has been developed which greatly accelerated manufacture. The woolen industry has not made as much progress as cotton, but several interesting pieces of machinery have been created there; for example, a machine to unravel woolen rags at a high rate of speed. Another machine is in the form of a high-speed automatic loom so controlled that at least six looms can be run by a weaver. In finishing products, perhaps the most important improvement has been the development in Sanforizing machines for the production of pre-shrunk fabrics. An improved method for treating fabrics composed of rayon or other synthetic fibers was announced. The process is said to eliminate the harsh feel, high lustre, and speckled face characteristic of many fabrics of this type, and to impart a soft, mellow tone which more nearly resembles that of real silk. Also, a new kind of finishing machine for tubular knit fabrics has been devised which subjects the fabric to a sponging, shrinks it, puts on the finish by pressing the goods under hot paper, and delivers a finished product. Those who have occasion to match goods may be interested in a recording color analyzer which is a photoelectric device and automatically draws for permanent record the color of a sample. Its extension is a device for matching col-

ors by means of photoelectric cells. In the knitting industry the outstanding development has been the introduction of a number of single-unit full-fashioned hosiery machines which are said to eliminate many of the previous difficulties in this field.

RAILROADS

Efficiency Factors.—While many talk of railroads as a sick industry, they are still, in the face of competition from trucks, automobiles and now airplanes, carrying an enormous share of the country's traffic. What is more, they are improving both their methods of operation and their competitive position in a general system of transportation. In 1931 they have established several new high records of operating efficiency. Freight train speed monthly average, for the first five months of 1931, was 14.5 miles per hour as compared with 13.5 miles during the same period of 1930. Fuel consumption in freight traffic for the first six months of 1931 was 122 pounds or 1,000 gross ton miles as compared with 125 pounds for the corresponding period of 1930. The consumption of fuel for passenger traffic was 14.8 pounds in 1931 and 15.0 pounds in 1930. The reason for this improvement is a very significant one and was largely due, surprisingly enough, to the falling off of business. The railroads have acquired a considerable amount of new rolling stock during the last few years, of very much greater efficiency than the old. During this period of so-called depression they have been using this new stock which proved to be sufficient to handle such traffic as the railroads now have, and the secret of their improved efficiency lies in this fact. Off-hand one would say that the moral of the fable is plain and points to the necessity for the railroads to modernize their antiquated rolling stock and get rid of patriarchs among locomotives and freight cars, some of which have been of voting age before the turn of the century. Whether the stockholder will stand for such a drastic depreciation of the equipment and whether the railroads can find the money to carry it

through is, of course, another question.

Meeting Bus Competition.—In an effort to meet the bus competition some of the railroads are resorting to lower rates and an increased use of special fares, reduced price for return trip tickets, etc. Others, like the Baltimore and Ohio, have introduced new types of day coaches such as the individual seat coach and the reclining seat coach and have generally tried to bring the comfort standard of the day coach up to that of the Pullman chair car. The use of air-conditioning in Pullman cars is a step in the same direction.

Speed and Airplane Competition.—The possibilities of airplane competition brought the railroads up against a problem of finding ways of running their trains faster. The Pennsylvania is doing it by electrification and is said to be planning a regular service train at 75 and possibly more miles an hour. In Germany experiments have been made with air propeller driven cars on regular rails, while in Scotland a line is under construction where the train will run suspended from a trestle.

Equipment.—In the field of equipment the outstanding achievement of the year may be said to be the construction of the heavy, modern, locomotive with many journals equipped with roller bearings. The locomotive generally is becoming more and more complicated. Several locomotives have been constructed abroad with working pressures of the steam of 850 pounds per square inch and recently one was built for 1700 pounds per square inch. The enormous Canadian Pacific locomotive has three pressures, with a double expansion engine fed from a two pressure boiler. In the field of freight car construction there has been a noticeable tendency towards equipment of higher capacity with reduction of the weight of the rolling stock itself. Thus a 70-ton hopper car has been built weighing, roughly, what a 50-ton car would weigh formerly. This reduction was made possible by the use of welding as against former riveting.

IRON AND STEEL

Processes of Manufacture.—The iron and steel industry has been one of those which, notwithstanding the drastic loss of business, has continued on a big scale the work of improvement in processes of manufacture and plant. As regards the former, an attempt to reduce the use of manganese in the manufacture of steel has been reported from the Watertown Arsenal of the War Department where gun steel of satisfactory character has been made by replacing manganese with zirconium. It will be recalled that during the war the extremely embarrassing shortage of manganese in this country (imported chiefly from the Russian Caucasus) compelled the Navy to send the cruiser *Cyclops* to bring manganese from Brazil. The disappearance of this cruiser is still one of the unsolved mysteries of the War.

Stainless Steels.—In the field of materials, the following may be mentioned as most important. In addition to stainless steels the so-called stainless-clad steels have been developed, that is, steels with a facing layer of stainless material and a core of ordinary carbon steel. The nickel clad steels belong to the same group of materials. A new type of malleable iron has been developed under the name of Zee metal. This is a material made from white cast iron by heat treatment which results in a product said to possess the advantages of ordinary malleable iron and in addition has physical properties above the range of steel castings. It has the machineability of ordinary malleable iron.

Sheet Materials.—In this particular field great mechanical progress has been made, and a strip as wide as 56" is now rolled without the least trouble. From an economic viewpoint the situation is not quite as clear. Five large mills of the fully continuous type are now in direct commercial operation. Three are under construction, and one more has been licensed but is not being built. These materials alone have a capacity far in excess of the demand that will be present even when business re-

sumes its regular pace and in addition there is another process in sight for making the wide strips, while the regular sheet mills of the non-continuous type have secured a new lease on life through the employment of the continuous pair and pack heating furnaces together with application of mechanical tables for handling bars and packs during the process of rolling. The method of making sheets to which reference is made is a development of the so-called cold process rolling of steel. In this method the billet is gripped by two coiler mechanisms located on two sides of the four high non-driven mill. What the coilers are doing is to pull the piece back and forth between the rolls. The distance between the latter being, of course, reduced every time by means of screwdowns. Re-heating furnaces are located at both sides of the roll stand and the metal is reduced at every pass back and forth. Not enough information as to the working of this type of mill is available to determine its economic importance. The first cost of the installation, however, is unquestionably low.

Tubing.—In the field of tubing great progress has been made both in

seamless and welded material. The most important development in the former has been the new expander mill which permits making seamless tubing with diameters up to 24". In these mills the first piercing is done on a conventional Mannesmann piercer whereupon the tube is reheated and passed through an expander using an internal mandrel and two specially beveled Stiefel discs. An effort is being made to develop commercially the process, tried to a limited extent in Germany, of extruding steel tubes in small diameters so as to cover a wide range of sizes with any desirable thickness.

Blooming Mill Operation.—The rather significant novelty in blooming mill operation has been the replacement of the conventional drive of the mill through a motor on the lower roll, driving the upper roll through gearing by the installation of individual motors on each of the rolls. To make this possible it is necessary to provide a speed control precise to within a fraction of a revolution.

Welded Pipe.—The most important progress in welded pipe during the year has been the development of methods of making spiral tube by arc welding and resistance welding.

ELECTRICAL ENGINEERING

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INTRODUCTORY

In comparison with former years, technical discussions in electrical engineering in 1931 gave way considerably to those concerning social, political and commercial topics. The business situation in the field was roughly as follows: Electrical manufacturing was about half that of 1929 but there was little or no price-cutting by major manufacturers; the generation of electrical energy was somewhat less than the 1929 level; the radio manufacturers were apparently engaged in such severe competition that the quality of sets on

the market was less than in the previous year; the telephone system, while suffering some loss of traffic, managed to maintain its staff and its dividends more or less intact. The first three of these conditions tended to decrease technical developments. The light and power utilities which have had and have planned for an annual increase in output of 8 to 10 per cent now have sufficient installed capacity for several years to come, a situation likely to be reflected in the volume of business of electrical manufacturers for some time. However, domestic business of the utili-

ties has increased steadily, which has somewhat ameliorated the large drop in commercial business.

The *Electrical World*, discussing the summer convention of the A. I. E. E., summarized the situation in technical work thus: "Exploration of current trends in electrical practice was the theme of most of the discussions. . . . Exploitation of new technical details of design was much less in evidence than at the preceding winter convention. The 'mark-time' attitude of business seems less conducive to courageous announcement of new designs and new schemes than to a methodical study of the probable inability of today's practices to meet the need of tomorrow's invigorated demands . . . management, infected with pessimism, has curtailed research and development programs to such an extent as to leave the engineers little to discuss but the industry's established practices. . . . Technical discussions focused largely on the broader questions of economic interest."

THOMAS A. EDISON

One of the outstanding events of the year was the death of Thomas A. Edison. He was one of the founders and a former vice-president of the A. I. E. E. His contributions to the material welfare of society, most of them of the type now produced by development and research engineers, need no review.

SOCIAL AND POLITICAL

Distribution Engineering.—At the winter convention (January, 1931) of the A. I. E. E. a telegram was received from Gifford Pinchot, governor of Pennsylvania, criticizing "the entire absence of any literature on distribution engineering." (Distribution costs were discussed in THE AMERICAN YEAR BOOK, 1930). President Lee in his reply, after explaining that many papers have been published and that there is a standing committee on distribution, pointed out that "to be acceptable (to the A. I. E. E.) a paper should present information which adds definitely to

the theoretical or practical knowledge of electrical engineering." This eliminates papers devoted solely to economic studies, but since these are usually dependent on such factors as manufacturer's price, taxes, interest, labor costs, depreciation, etc., which vary with company, locality and time, and since furthermore such studies are routine and well understood in method, there is no point in a continual review. Governor Pinchot's inference, in his reply, that distribution engineers are not keenly conscious of costs is as much in error as his original claim. However, the Institute later appointed a committee to determine if "... the Institute should devote more of its forces to non-technical activities, such, for example, as legislation, education and economic welfare of the engineer," and by the end of the year (but not because of the above action) papers on taxation, unemployment control, etc., were appearing in *Electrical Engineering*, successor this year of the *Journal* of the A. I. E. E. Incidentally, the change in publication practice of the Institute was due to the greatly increasing number of technical papers; under the present system most papers are printed in abstract in *Electrical Engineering*, and completely in pamphlet form.

Muscle Shoals.—The Muscle Shoals power bill passed by Congress was vetoed by President Hoover in March, and the government remained officially out of business at that place. The veto was based primarily on a straight engineering cost study; President Lee of the A. I. E. E. later in the year attacked the proposal on the same grounds. This is an important point to consider, for public ownership advocates are likely to have a white elephant on their hands and defeat their purpose by taking as their initial conspicuous example and rallying point an uneconomical venture. The position of engineers in politics has been widely discussed in this time of bad business when thoughts have been turned to social problems. There are topics—Muscle Shoals is an example—which, irre-

spective of the social question involved, be it public ownership or other, have at their bases certain facts determinable by an engineering study. Hence some engineers feel that social questions should be superposed on the engineering facts, not independently decided. As one put it, "In this country today we are polluted with too much political engineering."

Licensing.—On the other hand, there seems to be some difficulty in defining "engineer." Licensing laws for engineers have been proposed and in some states are in force, an engineer being defined as "a person who represents himself to be a professional engineer." The result has been that a person who has no college degree in engineering is certain to get a license if he can, while the technically trained men refuse. Opponents refer to plumbers' licenses, proponents to physicians' licenses. The chief argument in favor of legal licensing seems to be one of self protection. For example, architects in some cases have had bills passed which prevent all except licensed architects from filing plans for buildings and structures, supposedly in the interest of public safety—although as far as safety is concerned the architect seems, at least to engineers, to be a rather useless person compared with the structural engineer.

Defining an Engineer.—Meanwhile the public seems to remain in a haze as to just what an engineer is, while department stores advertise that their "radio engineers" will install sets. Not so long ago a writer in one of the "intellectual" magazines had difficulty in reconciling the fact that President Hoover was an engineer with the fact that he never seemed to have been closely associated with driving a locomotive, and in the *Atlantic Monthly* for August, 1931, occurs the statement, "To supplement the practical experience which the prisoners have thus secured, ten weeks courses have been offered them in . . . plumbing and electrical engineering . . .," made by an assist-

ant professor of sociology of Dartmouth College.

Industrial Stabilization.—Among other topics discussed in the technical and semi-technical journals were: plans for industrial stabilization, including one by Gerard Swope, president of the General Electric Company, which utilized the trade association of a group of manufacturers as the nucleus (the National Electrical Manufacturers' Association is an exceptionally good trade organization); and fair value for rate purposes, one prominent utility engineer holding that historical cost less depreciation should now determine the base. (Utilities in times of rising prices always advocated reproduction cost, and were upheld by the Supreme Court; reproduction cost has fallen.) One utility which issued a public warning that certain of its bonds, subject to call within a year, were selling far beyond the call price was denounced by bond brokers, apparently on the basis that the purchaser's "individualism" was being attacked.

The National Electric Light Association (trade association of the light and power companies) decided to adopt an attitude of "constructive aggression" regarding political attacks, in place of the previous more or less passive attitude. According to the *Electrical World*, "Those who attack the utilities with the ultimate object of socializing all industry must be forced into the open and discredited. Above and beyond any selfish interest is the civic obligation to prevent the discarding of economic principles under which this country has prospered."

LOAD BUILDING

Utility Taxes.—At a time when commercial load has fallen appreciably, load building (THE AMERICAN YEAR BOOK, 1930) came in for slightly more than its usual discussion. (For output, revenue and consumption statistics see the article "Electric Light and Power," Div. VIII.) One opposing factor is the recent tendency to increase utility taxes. Transmis-

sion lines, total output, electrical energy imported across state lines, gross receipts, etc., form the basis of these new taxes. Since the utilities are allowed a fixed return on investment, many of these taxes are simply passed on to consumers, being thus an indirect tax on the latter, but the increased rates are deterrents to increased use of electrical energy.

Energy.—The use of off-peak energy for the manufacture of gases has been advocated. Some studies seem to show that oxygen and hydrogen (now obtained from air) can be made electrolytically at low cost; likewise many other electrochemical processes have been suggested which could use off-peak energy when it was available, and, with energy charges fixed at generation costs, could show a profit. These ideas are variants of the scheme in use at Niagara Falls, where certain electrochemical industries are grouped. Meanwhile a study has shown that the load factor of a group of representative systems has shown very little improvement in the last five years, despite rates designed for improvement.

Heating.—A heating load, residential and commercial, seems the best present prospect. Off-peak heating, with heaters controlled by time clocks, has been inaugurated and widely pushed. There is a difficulty in that if other load is increased at an unexpected time (as when a storm arises), the total demand will be more than available capacity. To overcome this, the operation of residential heaters may be controlled from the central station by use of high frequency currents which will actuate the control switch at the heater. It has been estimated that the present use of electrical energy can be quadrupled (income doubled) by developing the potential loads in sight.

The cost of rural electrification (THE AMERICAN YEAR BOOK, 1930) has been reduced in some cases to almost half that of several years ago. Approximately 90,000 farms were connected to lines during 1930, an in-

crease of 16 per cent of the total number previously connected. One contributing cause of this increase is the great amount of electrical equipment which is specially designed for farm service.

SYSTEMS

Maintenance of frequency control on interconnected systems has resulted in divergent opinions and methods. No particular system of regulating frequency has been shown to be superior. Controlled *versus* uncontrolled flow of energy between systems is still being discussed and it has again been suggested that the interconnection of utilities and large industrial plants with generating facilities could be of economic advantage to both. Investigations have shown that generators in steam plants may lose synchronism and pull back into step without indication at the station; this is important in connection with system stability. A theoretical explanation of the instability of the neutrals of certain three-phase systems under apparently normal operating conditions has been obtained. "The day of the single large generating station with extended transmission lines to load centers appears to have passed in favor of the multiple station principle" (*Electrical World*). Outdoor steam stations do not appear to be meeting favor. The trend in system design is toward simplification and standardization of apparatus, system voltages, etc., and the use of factory-assembled units wherever possible.

HYDRO PLANTS

Hydro plants were not widely discussed in 1931; no new projects of great importance were announced. "Economic advantages in favor of hydro developments as compared with fuel-burning stations are steadily decreasing and added governmental and state restrictions upon water-power grants are likely to be decisive in restricting further investments," says the *Electrical World*. Outstanding present developments are the Hoover Dam project on the

Colorado River and the Beauharnois (Canadian) project on the St. Lawrence River, which will have a 500,000 hp. initial and a 2,000,000 hp. ultimate capacity; the latter has been connected with political turmoil recently. The proposed development on the St. Lawrence in New York State still awaits a treaty between the United States and Canada. A recent engineering study estimated 2,000,000 hp. available at \$78 per hp. (1930 costs), but distribution costs and poor load factor will not enable cheap electrical energy to get to New York City.

Of 96 billion kw.-hrs. output in 1930, 34.4 per cent was generated in hydro-electric plants compared with 39.5 per cent in 1928, and this tendency continued throughout the first half of 1931 (later figures not available). The two-year drought was one cause. The A. I. E. E. Power Generation Committee says, "From 1921 to 1928 the average yearly increase in generation was quite uniform at 11.5 per cent, in fuel generation at 10.9 per cent and in hydro-electric generation at 12.7 per cent. Applying these average rates to the figures for 1928 there is a calculated deficit at the end of 1930 of 12.1 per cent in total generation, 4.0 per cent in fuel generation and 32.5 per cent in hydroelectric generation. These figures show that the loss in hydro-electric generation caused by the drought allowed fuel generation almost to hold its normal increase notwithstanding a decrease of 1.5 per cent in total generation in 1930." In England for the fiscal year 1929-30 the Electricity Commission reported an increase in generation of 11 per cent; in the first eight months of 1931, an increase of 3.5 per cent.

The adjustable Kaplan blade (THE AMERICAN YEAR BOOK, 1930) has proved successful. It has an electrical equivalent in multi-speed generators, which may be a future development. Other improvements in hydro plant efficiency are likely to arise from plant design rather than changes in apparatus. At the new Osage project (Missouri; 200,000 hp.

capacity) the generators are outdoors, a tendency in hydro plant design which is increasing.

The umbrella-type generators (31,100 kv.-a, 109 r.p.m.) of the Pennsylvania Water and Power Company's Safe Harbor project are driven by Kaplan-type turbines and operate as motors, pumping water back into the fore-bay, at off-peak times. Energy comes from other parts of the system for the pumping.

TRANSMISSION

Lightning (THE AMERICAN YEAR BOOK, 1930) remains one of the chief topics of the literature. It is generally accepted that direct strokes are the chief causes of trouble and induced strokes are of minor importance. "Lightning proof" transmission lines are being built, but the general trend of discussion indicates much uncertainty as to just how much is definitely known, an about-face from the confident belief of not so long ago that lightning strokes on lines would be understood and amenable to control. The effectiveness of ground wires and low tower footing resistance as partial remedies has been shown; arcing rings, on the other hand, have been proved to be not so valuable as was once thought. The "deion" principle now applied in some circuit breakers (1929 AMERICAN YEAR BOOK) has been used to develop a new lightning arrester.

Interruptions to Transmission.—An interesting investigation showed that in one system seventy per cent of the transmission line interruptions not due to lightning occur at sunrise. No reason is known, and since the investigation is the first of its kind further tests are awaited. There is a wide diversity of opinion regarding the value of wood pole lines and wood insulation for high voltage transmission.

Gas Transportation in Pipe Lines.—The transportation of high pressure gas in pipe lines is economically possible over greater distances than is that of electrical energy; the energy of the gas must be converted to electrical or other form for use at

the receiving end, which raises the cost of ultimate energy. However, the fact that the load factor of the gas line can be maintained near 100 per cent if there are storage facilities at the receiving end indicates that this system of energy transmission may become a serious competitor with electrical energy transmission in certain sections of the country.

Direct-current high-voltage transmission has reached a stage where it is being seriously considered in connection with new tie-lines. The use of mercury-vapor electron tubes allows a-c. energy to be converted to d-c. energy at high voltage and later reconverted to a-c. energy, hence the scheme is applicable to existing a-c. systems.

Insulation research is continuing vigorously, with emphasis on fundamental physics rather than applications. Cable manufacturers are prepared to supply 220 kv. cables, and in one test a 220 kv. cable did not fail when subjected to 675 kv. There seems to be no commercial demand for these at present.

DISTRIBUTION

Voltage Network.—An innovation of prime importance in distribution is the use of a network (rather than a radial system) for medium-voltage primary circuits (4400 volts). The low voltage (110-220 volt) network is generally approved; the extension to the higher voltages has resulted under certain circumstances in material reduction in investment and increase in efficiency. Distribution costs have been the subject of attack by politicians (see Gifford Pinchot's statements above). Standardized substation units, factory-built, are available for use. The medium-voltage net is not, however, applicable to all cases; one utility after studying the system developed a radial system which, it is claimed, has all the advantages of the medium-voltage net and costs less.

Substations in general are becoming standardized, and composed of factory-built units. Up to 66,000 volts, a metal-clad unit complete with transformer and auxiliary ap-

paratus is obtainable. Recent automatic stations are being controlled from a distant center over only two wires. Telemetering allows indication of varying quantities at the control center. In one case dust-proof equipment has been used and maintenance costs greatly reduced.

Fire Protection.—The question of fire protection for stations, particularly unattended automatic stations, is receiving much consideration. Automatic fire detection and alarm, isolation of the fire by structural means, and methods of actual fire fighting must be considered on the assumption that fires will arise. The Automatic Stations Committee of the A. I. E. E. in its 1931 report lists 76 different categories into which the causes of fires in stations may be classified, together with fifteen classes of reasons for spread of fires, eight of preventive measures and six of methods for extinguishing fires. The problem of fire protection in isolated stations is not so simple as its statement indicates; in an extreme case a fire in equipment might occur in a distant unattended station, be indicated at the control station and extinguished by automatic means before a person could get to the station.

Telemetering.—The same committee reports that the chief criticism of telemetering was the "lack of high speed response with accuracy comparable to the usual switchboard indicating instruments." However, telemetering, which came into general use in the last five years with the extension of load control and switching operations necessitated by the increased size of (interconnected) systems and number of unattended stations, has thoroughly established itself.

MACHINERY

Generators.—With the development of a seal to stop leakage along shafts and of reliable control apparatus, hydrogen cooling is now applicable to generators. It has been extensively used with synchronous condensers, which do not have to be mechanically connected to any other

apparatus. Some of the largest synchronous condensers (50,000 kva.) are hydrogen cooled. Tests have shown that "a commutator machine designed and adjusted for good commutation in air will operate satisfactorily and give good brush life in hydrogen." The only very large new unit mentioned during the year was a 100,000 kw. unit for the Southern California Edison Company. This may be of the mercury vapor type, similar to the experimental 10,000 kw. unit of the Hartford Electric Light Company (1930 AMERICAN YEAR BOOK). Two new mercury vapor turbines (20,000 kw. each) are to be installed shortly, possibly presaging an important trend now that the experimental unit has been found successful and safe. Two 160,000 kw. turbo generators for the Brooklyn Edison Company were under construction. The demand for higher generator voltages has apparently subsided, because of the use of double windings in recent large generators.

Motors.—Other items of interest are: reactors are approaching sizes limited only by transportation requirements; the Ford Motor Company is replacing 27,000 d-c. motors by a-c. motors (a commentary on the great development and refinement of a-c. motors in recent years); burnt out motors may now be repaired by simply pressing out the core and inserting a new one; dynamic braking is replacing mechanical brakes on motors requiring quick deceleration; a new low-speed synchronous motor has been developed with adjustable starting torque up to 225 per cent of that at full load; frequency changers have been shown to have stability limits; three installed 18,750 kva., 3600 r.p.m. turbine-generator units (largest at this speed to be manufactured in this country) have internal propeller fans; "banked" radiators on transformers are returning to popularity.

Breakers.—Circuit breaker design is in a state of flux, several novel ideas have been suggested, one new

breaker has been developed in this country and there has been considerable discussion of breakers in the literature. The oil-blast breaker is the new one; in it, according to its developers, the arc and oil are not mixed in the main gap; the arc is swept away by an oil blast. The theory has been criticized severely but the apparatus works. Smaller breakers of a given rating result. An eight-cycle breaker for any rating seems to have been obtained. Abroad, compressed gas, water, resistance liquids and vacuum breakers are being tested (the last in this country also). However, for high-voltage high-capacity circuits the oil breaker seems to be the only one available.

Transformers.—Single phase transformers which can be shipped assembled have been increased in size by use of a new magnetic circuit arrangement consisting of three separate circuits side by side with two sets of coils acting as connecting links. The new shape allows higher rating transformers to meet railroad clearance requirements. A group of four 42,000 kva., 220 kv., non-oscillating surge-proof transformers was subjected to lightning tests with no harmful results.

Switchgear.—There is a marked increase in the use of metal-clad switchgear for heavy duty in place of both the indoor cell type and the outdoor open type. At voltages below 12 kv. gum-filled metal compartments are popular; for higher voltages oil seems to be the desirable medium. In some cases there is no special filler—the switch operates in air. It has occasionally been possible to ship from the factory a complete switching structure fully assembled, avoiding the usual disassembly at the factory and reassembly in the field. Since all "live" parts are totally enclosed in metal-clad switchgear, this type of apparatus is ideally suited to steel mill service, where the exclusion of dust and dirt is an important asset in addition to the safety features.

ILLUMINATION

The Illuminating Engineering Society increased its membership 21 per cent in 1930, due apparently to the great interest which has arisen in the last few years (*THE AMERICAN YEAR BOOK*, 1930) in architectural lighting. Close cooperation between architects and engineers is being maintained. The advent of the International Illumination Congress in London in September resulted in much floodlighting in that city for the first time.

Ultra-violet radiation, gaseous discharge lamps, etc., were under scrutiny during the year. Out of the pros and cons it can be gathered that radiation equivalent to that of the sun is of advantage to health, and the ultra-violet radiation can be shown definitely to be a preventive of ordinary colds and other ills as well as a cure for at least one disease (rickets). Dual-purpose lighting units are available, the output of which approximately simulates sunlight, including the ultra-violet part. Factories, stores, studios, etc., without windows are now in use; some ultra-violet radiating source is used with the lighting units. A new carbon arc lamp for producing ultra-violet radiation for commercial purposes has been announced.

Gaseous Discharge Lamps.—A cold cathode gaseous lamp which, it is reported, combines the advantages of the mercury-vapor lamp and the neon tube is being manufactured in Europe. It can be directly connected to a low-voltage outlet. Neon and other rare gas tubes made in this country have been adapted to low-voltage service (without auxiliary apparatus). This is an important advance if the predictions (1930 *AMERICAN YEAR BOOK*) that these lamps will ultimately find wide use are to be realized. Even light distribution, high intensity, high efficiency and good power factor (present gas tubes have very poor power factor) are claimed for these new tubes.

Lighting Fixtures.—Present-day general lighting fixtures have a distinct tendency to get away from imi-

tating candles and other older light sources, and to have designs along entirely new lines. To do this has required a diffusion of the light source—tubular lamps with long filaments—and it is here that many believers in the gaseous lamps see the greatest advantage of these, despite expert opinion here and there that the widespread use of such new light sources lies in the far distant future. One engineer has decried all of this and asked for modern fixtures using high intensity concentrated filament lamps, which are now available.

Lighting Control.—In the new Severance Memorial Hall, Cleveland, the color and intensity of auditorium and stage lighting is regulated from a control board built into an organ console, in somewhat the same manner that an organist controls pitch and volume of sound. There are several other similar installations.

Street Lighting.—A new lamp for street lighting has been developed, with the inside of the bulb coated metallically in such a way that a much greater portion of the available illumination is on the street, and much less lost in other directions. Reflectors are eliminated and costs decreased. A similar lamp has been used in some office buildings to get indirect lighting without reflectors. Several new cutout designs for street lighting lamps have been proposed to replace the present film cutout which has been used for twenty years, one with the cutout (copper particles covered with insulating compound which breaks down on failure of lamp) built into the lamp.

Service.—There has been a slight increase in the number of lamps sold for 120-volt service as compared with those for 110- and 115-volt service. An N. E. L. A. study shows, however, that the spread in voltages has not improved. A lamp which gives a single flash of sufficient intensity to use in photographic work has been placed on the market in this country. It consists essentially of crumpled aluminum foil in an oxygen atmosphere, which is ignited by a small filament. It can operate on any volt-

age between 2 and 130. The flash, which lasts about 0.02 second, is about equivalent to that which would be produced by 250 five-hundred-watt lamps.

TRANSPORTATION

Reading and Pennsylvania.—The Reading Company placed in service its electrification (*THE AMERICAN YEAR BOOK*, 1930) in and near Philadelphia; the Pennsylvania Railroad continued work on its extensive electrification and in June placed orders for \$16,000,000 worth of equipment, chiefly locomotives; certain inter-urban lines put into service trolley cars which were in some cases streamlined (designed by aviation engineers) and in some cases capable of traveling at 90 miles per hour. Otherwise there was a quietus in application of electricity to transportation in this country. (See the article "Electric Railways" in Div. XIII, for statistics.) The Pennsylvania plans to have its New York-Philadelphia electrification in operation in 1932 and extended to Washington, D. C., by 1933. The Reading Company announced at the end of the year plans to electrify the Norristown line of its Philadelphia suburban group.

Detecting Rail Fissures.—Railroads are now detecting fissures in rails (often the cause of accidents) by an electrical device which operates on the principle that the current in a good rail flows in the direction of the rail, while at a fissure the stream lines are distorted.

Locomotives.—There has occurred an interesting and possibly important development in the design of a-c. locomotives abroad. The low-voltage terminals of the transformer are brought out and all voltage control for the motors is accomplished by use of an oil-immersed tap changer and air switches in the high-voltage windings. This is an adaptation of the scheme for tap changing under load which is already extensively used in generating plants. If it is practical it "should materially simplify the design of a-c. locomotives." (A. I. E. E. Transportation Commit-

tee). Another development in locomotive design is an electrical arrangement for compensating the tendency to reduce weight on the forward drivers at high drawbar loads, especially at starting, because of the resultant moment due to drawbar pull and reaction. Shunts weaken the field of the leading motor of each truck, reducing its tractive effort. The forward drivers show less tendency to slip and the drawbar capacity is therefore increased.

Railway motors have been greatly improved in recent years, not only in weight per hp. but also in most other characteristics. Single-phase series a-c. motors have characteristics which compare favorably with d-c. motors, and it is now said that "locomotives built with these motors have better operating characteristics at all speeds than do steam locomotives." Hence whereas a-c. systems once had their chief advantage in high-voltage transmission and disadvantage in a-c. motors, the latter is no longer a great disadvantage and the former no longer a great advantage, mercury-arc rectifiers allowing moderately high-voltage d-c. transmission.

Steamships.—Several large ocean liners with turbine-electric drive were placed in service in 1931. Prior to 1928 the installed turbine electric horsepower on merchant ships was about 40,000; it is now more than 350,000.

Elevators.—A complete duplex elevator system, with an express and a local car in the same shaft, has been designed and installed in one instance. Protective devices make it virtually foolproof. The cost is believed to be no greater than the cost of two elevators in separate shafts; the saving in floor space, which can be rented, indicates that the system is economically desirable in high buildings.

Features of the Akron.—The U. S. Navy's airship *Akron* has electrical equipment which weighs only 3000 lbs. In some cases a saving in weight of 30 to 80 per cent of the corresponding commercial apparatus

has been effected. The main power plant consists of two 11 kw. generators (driven by gasoline engines) mounted on one shaft; in addition there are two motor-generator sets for the radio system. A switchboard with voltage regulator meters, switches and lightning arresters, three motorized pumps, fans, telephone and lighting systems, and a searchlight. Aluminum alloy was used in place of iron and steel wherever possible, shafts were made hollow and the switchboard was composed of mica-covered plywood.

RADIO

Television, although amply demonstrated in the laboratory, is still in about the same position as usual broadcasting was when the first commercial radio sets came on the market. Present television broadcasting stations all operate under "experimental" licenses, but there are other stations completely equipped to start commercial television broadcasting as soon as permission is granted and a demand exists. Meanwhile radio manufacturers see saturation (for ordinary sets) in sight and are advocating increased power for some stations to reach localities far distant from any present station. Other sources of trouble are the depression, overproduction, midget sets and public apathy toward broadcasting.

Vacuum Tube Patent Invalid.—The Supreme Court declared the General Electric Company's patent covering the ordinary vacuum tube (an improvement on the De Forest tube, patent on which expired) to be invalid.

"Wired Radio" Programs.—At the end of the year it was announced that "wired radio," the broadcasting over the lines of a light and power utility of radio programs, available (with proper apparatus) at every outlet and not interfering with the regular transmission of energy over the lines, is to be initiated in Cleveland. Three separate programs will be available; three carrier frequencies, 26, 39, and 52 kilocycles, will be used, one for each program. Nine

years of intensive development has preceded this announcement.

TELEPHONY

Cable Insulation.—A new insulation is being used in some telephone cables in place of the paper strip insulation employed for many years. The latter required the use of comparatively expensive manila (pure or mixed) stock. The new pulp insulation, as it is called, is paper made directly on the wire from wood pulp, with resultant economies. Cables of 26-gauge wire containing up to 1800 pairs of wires are now practicable.

Armored Buried Cable.—The Bell System is installing in certain suburban districts an armored buried cable (not in ducts) in place of the former aerial cable on a pole line for the local exchange plant. This fills a long-felt need for a cheap method of getting rid of pole lines in suburban districts where placing the cables underground was not economically justified. Almost a million feet of this armored cable have been installed.

Charging Filter and Decoder.—A filter has been developed which allows the use of ordinary commercial generators for charging the storage batteries which supply energy to central office lines; in consequence the special generators previously used may be eliminated. The sensitivity of the telephone lines to small variations in current has prevented this previously. Another new piece of apparatus is a decoder, whose operation depends mainly on relays, for use in place of the power driven translator to route a call from the office code dialed by the subscriber. It has greater capacity and is more economical and flexible. The number of dial phones increased 700,000 to a total of 6,300,000 in 1931.

Teletypewriter Service.—The Bell System is now offering a teletypewriter service which allows connections, between any two teletypewriter stations, identical with those now obtained with the telephone, the only difference being that communication is of the record type rather

than conversational. The Western Union and Postal Telegraph Companies have offered a teletypewriter service for some time, but not with the switching facilities available in the Bell plan. The two telegraph companies have introduced a timed wire service.

New telephone connections between the United States and the following places were made possible during the year: Java and some of Sumatra, Dutch East Indies; Latvia; parts of Italy and Sicily not previously connected; Canary Islands; some cities of Roumania; Rio de Janeiro, Brazil; Bermuda; Hawaiian Islands. In addition, radio telephone services between shore and tug boats in the harbors of five American cities will soon be ready.

Telephotography (transmission of pictures by wire) has been used in the United States and Europe. Installations have recently been completed in Japan.

Television is not used commercially in the telephone system although radio manufacturers are anticipating radio television shortly. A new development of the Bell Laboratories is to use multiple channels for transmission, resulting in the transmission of more details over the circuit, and consequently giving images of greater size and clarity.

Inductive Coordination.—An A. I. E. E. symposium was devoted to a review of inductive coordination, that is, to the work of coordinating extensions of power company and electric railway systems with the telephone plant in such manner that the former will not result in harmful induced currents and voltages in the latter. The question is of great importance to the telephone system from the point of view of its service, and to the power and railway systems since modification of design, to prevent serious interference, may result in large extra costs. At one time the problem was to be settled in court, but through the efforts of trade associations cooperation has taken the place of legal tangles, with the result that telephone engineers

now are consulted in planning new power system extensions, trade association standards have been promulgated, and in general the problem has been settled by concessions on both sides.

UNITS

Efforts are being made by the International Electrotechnical Commission, the American Standards Association (whose electrical standards committee became in 1931 the United States National Committee of the former organization) and engineering societies to make the c.g.s. magnetic units standard, thus eliminating various "practical" systems previously proposed. The I. E. C. has made changes in names on the assumption that B and H are of different physical dimensions, thus making the permeability a dimensional quantity. The name given to the unit of magnetizing force (H) is "oersted", to that of flux density (B), "gauss". This disturbs American practice, in which "oersted" was the unit of reluctance (something of a misnomer) and in which "gauss" was the unit of both B and H, permeability being dimensionless. A reactive volt ampere is given the name "var".

A new and apparently much more definite physical standard for the candlepower has been developed by the Bureau of Standards. It is being considered internationally. The light source is a tube, immersed in melting platinum except for an open end. The standard is accurately reproducible.

PATENT COURT

A patent court, to outrank all except the Supreme Court, has again been proposed in Congress. At present in a patent suit, or in any suit involving highly technical questions, it is usually necessary to give the equivalent of a brief course in physics for the referee appointed by the court, before attempting to explain to him the technical questions. For example, use of oscillographic records in court requires so much explaining that this very common method of

illustrating change in some physical quantity with time is greatly limited. The proponents of the bill, which is approved by the American Engineering Council, hope that the judges will "acquire a facility for comprehending the science and engineering of patent cases which will enable them . . . to make a selection on their own judgment between the conflicting opinions of experts." Some people think that it might be easier to teach law to engineers, physicists, etc., rather than to teach lawyers physics, and that the judges could better be technical men than lawyers.

INSTRUMENTS

A new power oscillograph which automatically records a disturbance from 1/20 second after the appearance of the fault has been developed. A new voltage regulator for large generators is vibrationless except when the load changes appreciably.

Electron tubes (THE AMERICAN YEAR BOOK, 1930) have been used in newly developed forms of devices such as voltage regulators, synchronizers, etc. A dry type commercial photo-electric cell with exceptionally good characteristics is available. X-rays are finding increasing industrial applications, two of which are the testing of welded joints and the examination of castings for flaws. Very heavy castings can be examined more easily by use of radium, which can be more easily transported than x-ray apparatus (only the tube of radium and a proper photographic plate are needed) but which is much more expensive. High-voltage direct-current transmission has been proposed using electron tubes, and with such a system the use of tubes for switching in place of oil circuit breakers has been predicted.

Noise, a widely discussed topic of recent years, was the subject of a symposium of the A. I. E. E. The study is still in the starting stage, and the chief need at present seems to be agreement on a unit and scale of measurement, eight different scales being in use. Electrical engineers are interested because noise fre-

quently arises from electrical apparatus; a test in a New York subway showed that most noise came from accelerating motors. Mechanical and acoustical engineers are equally interested.

Welding is now widely accepted in manufacturing; for some production processes it is possible to use automatic welding. Structural welding, initiated several years ago, awaits a revival of the building industry. A hundred cities have adopted codes covering welded structures. A \$25,000 house (Cleveland) is to have a welded steel frame, estimated to cost only \$70 more than the traditional wooden one.

Electrochemical and electro-metallurgical processes have added their share to the many developments of recent years. A committee of the A. I. E. E. reports its belief that the young electrical engineer will find the best future in this field. Milk is now being pasteurized electrically.

The Drumm storage battery is being further tested in Ireland, and a four-coach battery-operated train is being built. If this new battery proves successful it will be the first important commercial development in years in the storage battery field, despite its importance.

MISCELLANEOUS

An International Electrical Congress to survey the progress in theory and application of electricity in the last twenty-five years is to be held in Paris in 1932.

Six utilities have joined in setting up an experimental wind-rotor plant.

A completely automatic parking garage (experimental) has been in service at East Pittsburgh for several years. No attendants are required; cars are carried in large cubicles attached to two endless chains; control apparatus causes the car to be brought to the garage door and the latter to open after the driver inserts a key in the proper lock at the front of the building.

A discovery which may be of practical importance is that ordinary

polycrystalline iron when treated at a high temperature in a hydrogen atmosphere acquires a very high permeability (up to 180,000).

The magnetostriction oscillator of

Pierce has been made available for use at radio frequencies by the use of certain alloys with very good magnetostrictive properties and small temperature coefficients.

AUTOMOTIVE ENGINEERING

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GENERAL

The predominant development of 1931 lies in various means to simplify the operation and control of the automobile, particularly the clutch and gear-set. The formerly accepted sliding-gear transmission is now the object of concentrated efforts in design and research, which may ultimately lead to automatic control and infinite speed and torque variation. Light alloys are being given considerable consideration to improve performance and their use in the truck and bus fields has reached a rapid impetus.

ENGINE

Cylinder Capacity.—Twelve and sixteen cylinder engines, especially the former, have gained new adherents. The four seems destined to a new lease of life through improved mounting methods which overcome the transmission of its objectionable vibration and torque impulses. Increased bus capacity and higher truck speeds call for still larger power-plants.

Compression ratios have not advanced and average $5\frac{1}{4}$ -1. High compression heads are standard with several manufacturers who obtain low compression, when desired, by the use of a specially thick or extra head gasket. A twelve-cylinder heavy-duty engine has been developed with a 30° angle between the two-cylinder banks which are cast in one block with the crankcase. It also employs dry cylinder sleeves which, with the wet type, are being given more consideration. Dense grain due to centrifugal casting, special application of heat-treatment or nitriding and

economical replacement are some of their virtues.

Exhaust Valves.—Due to rapid pitting and wear of the usual cylinder block material, inserted exhaust valve seats which can maintain their hardness up to quite high temperatures are being used in truck and bus engines, affording the possibility of 50,000 miles of service with no need of regrinding or valve adjusting. To dissipate heat from the head, a copper-cooled valve has been introduced in which copper is forged symmetrically into the valve stem and head. There is an increase in the number of cam-shaft bearings to prevent springing which would nullify careful adjustment and machining.

Pistons.—Cast iron is considerably improved by alloying molybdenum with it and several models appear with this material for their pistons. Head thickness has been increased in some instances to reduce detonating tendency. Piston slap has been reduced by the judicious location of the slot in split-skirt aluminum pistons or the circumferential positioning of the bottom ring whose shallow groove retains an oil cushion behind the ring.

Crank Case.—The aluminum connecting rod has made no further gains. Heat-treated chrome molybdenum steel is being used for heavy-duty crank-shafts. The bonded rubber type of torsional vibration damper is more widely used. Placing the breather at the center of the crank-case has been found to reduce noise. To prevent any road dust from getting into the oil supply, the

air on entering the crank-case through the breather is filtered. Oil cooling is being more widely adopted. Twin filter-units are being used on large engines. Intermittent internal cleaning of filters is accomplished by a "scrubber" actuated by each application of the starter pedal or parking-brake lever.

Noise Reduction.—A noteworthy accomplishment of the year is the reduction of the apparent fan noise obtained by changing the angular spacing of the blades. It is made to blend or merge with other power-plant noises. Radiator cores are more efficient. Whereas some makers have increased the water capacity around the cylinders, others have reduced it, to favor rapid warming-up, and have increased the rate of circulation. The V-type radiator is increasing in popularity and has been adopted by some of the conservative manufacturers. Externally attached radiator grilles are now being built-in. The false top-tank is no longer used.

Dual carburetion is now used on most eight cylinder engines. Air cleaners are universal with the oil-bath type predominating for heavy-duty work where dust is prevalent. Lowering the intake air temperature has been obtained by scooping-in the air from outside the hood. Thermo-static control, sensitive to exhaust manifold temperatures, is used in one case to ration the hot or cold air to the carburetor and in another to regulate the choke. Isolating fuel lines from the exhaust heat and covering them with insulating material where they are exposed under the hood, has minimized vapor lock. Much remains to be done, however, in locating the fuel pump away from the hot crank-case to which it is almost universally affixed. A combination engine-driven fuel and vacuum pump had been devised, the vacuum pump maintaining in conjunction with the intake depression a constant suction for the windshield wiper.

Electrical Equipment.—Considerable progress has been made with electrical equipment. Of particular note is vacuum ignition timing con-

trol in conjunction with the already developed automatic centrifugal advance. The 14 mm. spark plug has further converts. An automatic switch has been developed which starts the engine when the ignition key is turned "on," repeats if the engine fails to pick-up and restarts if it stalls. Higher reduction ratios between the starting-motor and the flywheel have been worked out in the same space limitations by change in tooth pitch. To eliminate danger of over-heating, a ventilated generator is used, having an intake scoop facing the radiator fan and an outlet from the other end extending down through the splash pan. Greater capacity is demanded in the heavy-duty field. Trucks are using 150 watt generators whereas 115 formerly sufficed; buses now require up to 1000 watts output. Locating the passenger car battery in the right front fender is increasing in favor.

Rubber mountings are still on the increase. Outstanding is the two-point mounting of a four-cylinder engine in which an axis through these points passes through the center of gravity of the engine. A quarter-elliptic stabilizing spring secured to the clutch housing preserves the normal position. Larger rubber units are being used and more of them, up to eight. However, they are often placed in such close proximity that, considered rotationally about a longitudinal axis, the eight- or five-point mountings are essentially three or four points.

CLUTCH

Automatic clutch operation comprises the use of a centrifugally actuated engaging means or the use of a vacuum actuated throw-out. In the former, the clutch spring disengages the discs as opposed to the centrifugal weights that bring them into contact at speeds above 400 R.P.M. When slowed down by the brake, automatic disengagement occurs and when the engine is speeded up by the accelerator, a smooth pick-up ensues. The other method utilizes the vacuum in the intake by

actuating a diaphragm piston that moves the clutch pedal or shaft. The accelerator pedal is connected with a vacuum control valve as well as the carburetor and operates the former when at the rear end of its stroke. Pressing down the accelerator releases the vacuum in the diaphragm chamber, allowing the clutch to engage and further movement speed-up the engine in the usual way. A modification of this system consists of a second control valve in series with the other and which is actuated by a button on the toe board. This button must be depressed by the foot to hold the second valve open and allow the first one to be responsive to the accelerator control. To provide for different rates of clutch engagement, depending on the shift to be made, another valve is placed in series which presents different sized orifices depending on the relation of the gear-shifting rods. A synchro-mesh transmission also plays a very important rôle in this combination. Coasting is possible by holding down the button and keeping the right foot off the accelerator. The clutch throw-out and pilot bearings have been enlarged for this added work. High grade, alloyed cast iron is being used in heavy-duty discs, thanks to the experience and developments in the brake-drum field.

TRANSMISSION

Synchro-mesh transmissions with the cone-clutch synchronizer have increased. Helical gears are used in greater number for constant mesh combinations. Free-wheeling is now offered in most cars. There is a distinct trend toward the use of a free-wheeling unit at the rear of the transmission where it is effective in all forward speeds. A lever on the dash usually controls the unit and its position is indicative as to whether the car is free-wheeling or not. The original method of using sets of three different sized rollers is giving way to independent rollers and wedge surfaces, all alike, to the extent of six or eight. The free-wheeling unit is automatically locked-out in going into reverse. With the return of the main

gear-shift lever to neutral, the unit again becomes operative through the use of a spring, provided the control lever is in the free-wheeling position.

UNIVERSAL JOINT

For long wheel-base cars, where cost is not of major importance, a three joint propeller shaft is used to avoid difficulties due to whip and possible lack of balance. One maker utilizes a center-support for such a shaft by mounting the bearing in a casting which is noise-insulated from the cross member support housing by rubber securely vulcanized therebetween. A pin and yoke type universal has been developed utilizing "needle" bearings instead of plain bushings. The original lubricant should last for 50,000 miles, hence no grease connections are provided.

AXLES

The strengthening of axle housings, differential carriers and the gearing follows in the wake of increased power. Wider treads continue, front and rear, now reaching 61½" in passenger car rear axles. Ten spline shafts are replacing the six. A new type bevel-gear differential has been developed, utilizing few teeth which are considerably longer and heavier. This results in a variation in the lever-arm of the tooth contact between the pinion and side gear instead of being constant. The increased torque transferred to the side gear is supposed to maintain propulsion of the vehicle until the two sides have again been equalized.

In the heavy-duty field, considerable activity exists in six-wheel vehicles, with two rear driving axles. An inter-axle differential has been found essential. It has been found desirable to reduce the axle shaft diameters to slightly less than the root diameters of the splines to eliminate localized torsional stress. An oil return to prevent the warm driving-unit lubricant from thinning the wheel-bearing grease consists of a coil of wire wound in right and left hand spirals and snugly fitting the outer ends of the shafts. In the chain-drive field, one maker has developed two

rear driving axles with a common jack-shaft between the two. Chains and pinion sprockets for each axle are close together with minimum clearance.

BRAKES

Cast drums to replace pressed ones are becoming popular in passenger cars where scoring, distortion and inability to dissipate heat has made the change necessary as was similarly found imperative in the heavy-duty field a few years ago. A new drum is being made of two-piece construction, welded together. The back is a stamping and the drum-ring of rolled, rib-section steel is hooped into a circle and welded, carefully sized and normalized, and then united with the back. Another drum has radial ribs cast on the inside of the back and a thin plate covers them except near the braking surface. This forms a fan when in rotation, drawing air in through holes near the center and blowing it out between the friction surface and the lining.

Brake rods are being fitted with anti-rattle springs at all connections. Cross-shaft mounting in self-aligning, spherical bushings is becoming common with mechanical brakes. There is an increase in the use of zinc wire in brake linings instead of brass to reduce scoring of the brake drum. Brake blocks are now produced with an alloy-grid backing plate.

WHEELS, RIMS, TIRES

The trend to smaller overall diameters and larger cross-sections has resulted with only a few exceptions, in the entire passenger car industry going to 17" and 18" wheels. The wire wheel is extremely popular and when wood wheels are supplied they are usually demountable at the hub. A stamped and welded wheel, six pounds lighter than its equivalent in wood and considerably stronger, is now available in either low-carbon or stainless steel.

Drop center rims are now the vogue. The valve in most cases comes out at an angle through a hole in the corner of the well. Passenger car tires now run up to 7.00"

and 7.50" sizes. Since various units of the car have been made less noisy, the demand for quieter tires is being met by changes in tread design details.

SUSPENSION

The rubber block spring mounting is rapidly declining while the rubber bushing type is increasing. An anti-rattle type of spring-shackle bolt is one which is threaded into the spring end instead of being plain, leaving considerable side clearance without play. One maker provides curled ends on the spring leaves and the corners are trimmed to give a fuller bearing surface.

In the truck field, to keep within the maximum permissible overall width with dual balloon tires, one builder uses a tandem semi-elliptic mounting with one spring above and the other below the axle housing, in order to maintain the greatest frame width. Several manufacturers are suspending the rear of the frame directly on the walking beams of the two-rear-axle bogie unit without any springs, depending entirely on the resiliency of the balloon tires and the rocker effect of the walking beam.

FRAME

Greater torsional stiffness is being afforded by box-section cross members and side rails. In the latter, two opposed channel members, one inside the other, are united by cold riveting and arc welding at points. Forward of the cowl, the frame is not braced by the body and is weak torsionally. On several cars there are struts extending from the radiator shell to the head-lamps and fenders which, with the conventional transverse tie bar unites the entire front-end to the cowl by means of the hood and a heavy V-bracing from the dash to the radiator. To further dampen out torsional movement of the front end structure, one maker provides a weighted mass at each end of the bumper which normally rests between two sets of calibrated concentric springs.

CONTROL

There is an increase in the mounting of the clutch and brake pedals on the frame-side rail, so as to be independent of power-plant vibrations. Rubber covering of pedal faces is popular. To eliminate shimmy and road shock, one bus has the steering mechanism mounted horizontally on the front axle bed with a small propeller shaft conveying motion to it from the steering column. To keep the three-spoked steering wheel in a position to maintain an unobstructed view of the instruments ahead of it, with variations in column angularity, an adjustment has been provided at the rear of the drag link. Besides the free-wheeling control, a "ride" regulator has been added which consists of a lever on the dash or steering column, controlling the by-pass orifice of all the hydraulic shock absorbers.

EQUIPMENT

License brackets are being moved to one side so as not to obstruct the radiator lines. A four-beam, asymmetrical head-light has been developed, using three filaments. The tail-light lens is being provided with a reflex element to warn cars approaching from the rear even if the light is out. The use of dual tail lamps is increasing. Two horns, one below each head-light, is a new trend. Shock absorbers are provided with automatic thermostatic control to compensate for viscosity-temperature changes. There is a distinct tendency to group all instruments at the left and provide a lockable package compartment at the right of the instrument board.

SHEET METAL

Considerable effort has been expended in smoothing-out all sheet-metal work, the avoidance of sharp corners, and the inclosure of chassis parts. Fenders and hood-sills are usually in one piece. The front frame horn is being enclosed. Doors in the hoods of most cars lend elegance as well as under-hood temperature control. Cover plates in side splashers

have been eliminated for better appearance by a relocation of the lubricating fittings.

BODY

While much interest has been manifested in engineering circles in the "tear-drop" car as well as its corollary—the rear-engined car, due to the reduction in air resistance, it is will agreed that this design does not lend itself to present concepts of beauty. The public must become educated to its possibilities in gradual steps while the manufacturer preserves a balance between aerodynamic efficiency and that elusive, changing element called beauty.

"Aerodynamic" windshields are popular. Insulation to prevent heat and noise from reaching the interior of the car is used universally. Asbestos is liberally used on dashes and toe-boards. Lower body panels and doors are either sprayed with an asphaltum composition or covered with cardboard or asbestos millboard cemented on. This is further supplemented in some cases with a felt padding to afford additional security. Five-ply laminated floor boards are often used instead of metal. To prevent squeaks, insulating material is used in body joints wherever possible, comprising such materials as felt, wool, cork, rubber, rubberized fabrics and anti-squeak strips. Even the seat-cushion spiral springs are silenced by cotton pads. Pedal and control apertures are closed by heavy felt or surrounded with sponge rubber and felt pads for sealing purposes. A thick padding under a heavy rubber mat usually covers the floor. A wool facing is sometimes cured on to the rubber, the wool being waterproofed. Front compartment carpets are sometimes used which are finished on top with an enamel black drill material to facilitate cleaning.

A new type of seat adjustment mechanism allows the seat to be rolled either forward or back after raising a handle at the side. Door hinges are now being fitted with

NAVAL ARCHITECTURE AND MARINE ENGINEERING

bronze bushings. To prevent accidental locking with the keys inside, the locking handle on the right front door snaps to the unlocked position when the door is closed.

With the advancement of the body-die art, all moldings and beadings are stamped into the panels. One manufacturer mounts the body on cork shims on outriggers so the bottom of the sill is on the neutral axis

of the frame. Rubber shims have been found impractical.

There are developments under way which may considerably change the present relationship of body and frame interconnection, to overcome present difficulties arising from their relative deflections. Much of this will be dependent on experiments now being made in the welding of chassis frames.

NAVAL ARCHITECTURE AND MARINE ENGINEERING

BY H. H. BROWN

EDITOR, *Marine Engineering and Shipping Age*

GENERAL TRENDS

Shipbuilding in the United States in 1931 was confined mainly to the construction of relatively large and fast passenger- and cargo-steamships, naval cruisers, motor tankers and large Diesel yachts. In all this construction the trend has been toward improvement of the shape of the hull and its appendages in order to secure a form that will offer the least resistance to propulsion and still prove seaworthy in heavy weather, and toward the reduction of structural weights in order to secure higher speeds or greater carrying capacity on a given displacement.

In the case of vessels propelled by steam machinery, the trend has been toward the use of higher steam pressures and superheat together with more economical propelling machinery of lighter weight. In the case of vessels propelled by Diesel engines, the trend has been toward the development of engines that will be lighter in weight, simpler in construction and lower in cost. In both steamships and motorships there has been a marked tendency toward the more general use of electricity, not only for driving the ship itself and its auxiliary machinery but also for performing most of the functions aboard ship requiring light, heat or power.

HULL FORMS

Stern and Bow.—In most high-speed ships built in 1931 the stem is raked forward with a rising forefoot designed to improve the maneuvering qualities of the vessel. Below the waterline a bulbous form of bow of moderate size has been adopted in the majority of cases, which serves not only to increase the stiffness of the structure but also to reduce its resistance to propulsion. Above the waterline the bow is flared, with a high freeboard, to insure a dry ship in a heavy sea.

Stern.—The sections of the after body of the ship are generally of V shape with the lines fined as much as possible to secure a free run of water to the propellers. The propeller struts and the rudder are of airfoil section streamlined to reduce the resistance. Until recently the stern in medium or fast twin-screw ships has been of the cruiser type, but in several passenger ships delivered in 1931 the overhang type of stern has been adopted. This type, which was used for years before the cruiser type became common, not only gives a more pleasing profile to the ship but it serves to protect the rudder and propellers when docking the ship.

Superstructure.—In modern high-speed passenger ships the superstructure, funnels and other erections are streamlined to reduce wind resistance. In most cases the upper

promenade decks overhang the hull proper on each side by from 1 to 4 feet to give added deck area and facilitate the lowering of lifeboats when the vessel has listed. The promenade deck is partially or totally enclosed with glass to protect passengers in stormy weather.

Power.—No ship of any size or consequence is designed today without first determining by model experiments the most economical form of hull for the service for which the ship is to be built and the effective horsepower required to drive it at the designed speed. While the estimates of power made from the results of model tests agree fairly closely with the performance of the full-sized ship in the case of high-speed vessels, certain discrepancies still exist in the case of vessels of moderate speed where the frictional resistance forms a greater part of the total resistance of the hull and the action of the propeller is more difficult to determine. Valuable data on this subject were obtained in 1931 from elaborate progressive speed trials over a deep-water measured mile course of two of the largest vessels built.

SHIPBUILDING MATERIALS

Use of Alloy Steel.—In the building of high-speed vessels, such as passenger liners and naval cruisers, an important development that has attracted wide attention during the past year is the increasing use of high tensile or alloy steels for the strength members of the hull. By using such steels it is possible to reduce the weight of the hull materially without sacrificing strength. In the case of large passenger vessels the weight saved can be used for increasing the size and weight of the propelling machinery, so that higher speeds may be obtained without increasing the size of the ship or its displacement. In the case of naval vessels the demand for higher strength structural steel has become more urgent because of the limits placed upon displacement of warships by the Washington and London Treaties, which make it more desir-

able than ever before to save weight in the hull, so that in a vessel of limited displacement this weight may be made available for military features such as increased armor, armament, speed or radius of action. Some idea of the advantages that can be obtained by the use of high-tensile steel in high-speed ships may be obtained from the design of two 56,000-ton super-liners recently designed for the North Atlantic service of the United States Lines. In vessels of this class, requiring some 27,000 tons of steel for the hull structure, from 8,000 to 12,000 tons or more of high-tensile steel can be used in the strength members at a net weight saving of from 1,000 to 1,300 tons.

Aluminum Alloy and Paint.—A further saving of about 700 tons in such vessels could be made by the use of aluminum alloy in deck houses on or above the sun deck and for some of the joiner work and furniture, and by the use of aluminum foil as the insulation material for refrigerated storerooms and on steel casings, decks and bulkheads, and by the use of an aluminum paint instead of red lead paint on the steel. These materials are now being extensively used for these purposes by the Navy Department on its new cruisers.

STABILITY

As all new passenger ships built under the provisions of the Shipping Board Construction Loan Fund must comply with the most modern safety standards, they are required to have a positive metacentric height in light condition. A further requirement is imposed by the Navy Department that the ships shall be stable and remain afloat with a certain number of the adjacent main compartments open to the sea, the number of compartments depending upon the size of the ship. This means in general that the ships must have a greater number of transverse watertight bulkheads, and that the bulkheads, particularly those forward, must be carried to a greater height than formerly. As a result, all of the pas-

senger ships built to meet the Mail Contract Provisions of the Merchant Marine Act of 1928 are the safest ships afloat and for the most part they exceed the requirements of the International Convention on Safety of Life at Sea of 1929.

In the case of the 56,000-ton superliners designed for the United States Lines, which are 945 feet long on the waterline, the Navy Department has required that these ships should be stable and remain afloat with the forward five, or any other group of four adjacent main compartments, open to the sea. This requirement has been met by the fitting of seventeen main transverse bulkheads dividing the ship into eighteen main compartments. These bulkheads extend up to the upper deck. Between the upper deck and the shelter deck watertight wing bulkheads are provided over nine of the main transverse bulkheads. These wing bulkheads are designed to prevent water from flowing fore and aft at the ends of the compartment groups open to the sea when the ship takes an excessive angle of heel. By means of the wing bulkheads added safety is obtained without interfering with the arrangement of passenger accommodations on the upper deck, which would be the case if the transverse watertight bulkheads were carried up to the shelter deck.

PASSENGER ACCOMMODATIONS

Decoration.—In keeping with the standards set by first-class hotels ashore, naval architects are providing in the new American liners every form of luxury, comfort and convenience that can be devised to suit the taste of discriminating travelers. The interiors of the public rooms invariably reflect modern modes of decoration in which the lavish use of color and unusual lighting arrangements provide new and highly pleasing modernistic effects. In two 400-foot vessels reconditioned in 1931 for the Mississippi Shipping Company the Spanish style of architecture has been adopted in the interior decoration with striking effect; the same style has also been elaborately

worked out in the public rooms of the new United Fruit liner *Talamanca*, delivered in December, 1931. In the *Mariposa*, which was completed in December for the Australian service of the Matson Line, an unusual treatment of the public rooms has been used based upon Chinese motives. A noteworthy example of modern effects in color, paneling, furnishings and lighting is found in the interior decoration of the new Dollar liners *President Hoover* and *President Coolidge*, completed earlier in the year, which are the largest merchant vessels so far built in the United States.

Luxuries and Comforts.—In all of the American passenger liners built in 1931 the practice of grouping the main public rooms on the promenade deck has been followed, the dining rooms and galleys being located on the lowest passenger deck. Most first-class staterooms either have a private bath or are connected to a private bath with adjoining rooms. The staterooms are provided with single or twin beds, as the built-in berth of former days has become practically obsolete in passenger accommodations. An innovation in modern practice is found in the *Mariposa* where air conditioning equipment has been installed for the main dining room. This practice is also being followed in the two 705-foot transatlantic liners now being built for the United States Lines.

Recreation Facilities.—On vessels designed for service in tropical waters outdoor swimming pools are provided for both first-class and tourist passengers. The recreation facilities include sport decks, gymnasiums, sheltered dance floors and complete equipment for moving picture and radio entertainment.

STEAM PROPULSION

Pressures and Fuel Consumption.—Except for a number of oil tankers and small vessels of miscellaneous types, requiring less than 1,000 horsepower, which are fitted with Diesel propelling machinery, all the vessels built in the United States in 1931 were propelled by steam ma-

chinery of either the geared-turbine or turbo-electric type. Steam pressures of from 300 to 350 pounds per square inch with from 200 to 250 degrees of superheat were used. The fuel consumption of the largest geared-turbine liner built during the year, which was the 20-knot Matson liner *Mariposa* of 18,500 gross tons, was 0.627 pound per shaft horsepower per hour for all purposes. The steam consumption of the largest turbo-electric steamship, the 20-knot Dollar liner *President Hoover* of 22,000 gross tons, was 0.669 pound per shaft horsepower per hour for all purposes. These results are typical of what may be expected from average practice with steam propelling machinery at the present time, although certain vessels built abroad during the year have a still lower fuel consumption. An outstanding example is the geared-turbine liner *Empress of Britain* on which the fuel consumption is 0.57 pound per shaft horsepower per hour.

Turbine Machine Design.—The directions in which steam propelling machinery has advanced, so that it is now possible to build 30-knot transatlantic liners with machinery weights less than were required 15 years ago for vessels of the same size but capable of only 24 knots speed, are the reduction of the revolutions of light high-speed turbines to the economical revolutions of the propeller shafts by either mechanical or electrical means and the adoption of larger units of highly efficient water-tube boilers. In the 56,000-ton super-liners designed by Theodore E. Ferris for the United States Lines, and described by him in a paper on "American Super-Liners" presented at the 1931 meeting of the Society of Naval Architects and Marine Engineers, the geared-turbine propelling machinery is designed to develop a maximum of 180,000 shaft horsepower, being supplied with steam at 400 pounds per square inch and 252 degrees F. superheat by eighteen boilers. The estimated weight of this machinery is only 8,175 tons and it has an output of 22 shaft horsepower per ton

of machinery weight and 3.74 shaft horsepower per ton weight of the light ship. In comparison, the *Bremen*, built in 1929 develops about 18.7-shaft horsepower per ton of machinery weight and 3.18-shaft horsepower per ton weight of light ship, while the *Leviathan*, built in 1914, and still in service as the queen of the United States North Atlantic fleet, develops only 10-shaft horsepower per ton of machinery weight and 1.6-shaft horsepower per ton of light ship. The *Leviathan's* boilers have an output of 1,500 horsepower each, the *Bremen's* boilers have an output of 5,000 horsepower each while the boilers of the proposed American super-liner are designed for an output of over 11,000 horsepower each.

ELECTRIC PROPULSION

Turbo-electric drive, because of its wide range of flexibility, freedom from vibration and economical operation at reduced speeds of the ship, has become a strong favorite as a means of propulsion for high-class passenger ships in the United States. The requirements of passenger vessels, which include seasonal changes of speed, alterations of speed between various ports on a voyage to maintain schedules and reduced speeds for pleasure cruises, emphasize the need for a power plant having the widest degree of flexibility. The ability of turbo-electric drive to operate all propeller shafts at high economy with part of the main power plant shut down is a feature not obtainable with other forms of drive. About 73 turbo-electric ships of different classes are now in service or under construction throughout the world, having a total of about 1,135,000-shaft horsepower. There are also about 129 Diesel electric-propelled vessels with about 105,000-shaft horsepower. In the United Fruit Company's turbo-electric liner *Talamanca*, built in 1931, both the generators and propulsion motors are fitted with closed-circuit air coolers. This is the first merchant vessel in the United States to be fitted with this type of cooler for the propulsion motors. In simi-

COMMERCIAL MARINE ENGINEERING

lar vessels fitted with Diesel-electric drive the operation of the machinery is frequently controlled from the bridge. This arrangement is particularly advantageous on tugs, ferries and fireboats operating in crowded harbors.

LINER CONSTRUCTION

Since the passage of the Merchant Marine Act of 1928 naval architects and marine engineers in the United States have had an opportunity to design and build a considerable num-

ber of relatively large and fast passenger liners for overseas service. This is a class of vessel with which they have had little experience in former years, and in their development many new problems in construction of both hull and machinery have had to be solved. The results, as disclosed in 1931 by the completion of many of these vessels, show the ability of the designers to be of a high order. The speedy new liners that have just been completed are a credit to the designers and builders.

COMMERCIAL MARINE ENGINEERING

By A. H. JANSSON

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PROGRESS IN MERCHANT SHIP-BUILDING AND MARINE ENGINEERING

Volume and Outlook.—The United States continued in second place as a shipbuilding nation. As compared with 417,385 gross tons of new ship construction under way in Great Britain and Ireland at the end of the third quarter of 1931, the United States had 261,364 gross tons under way. However, the prospects for continued activity are not bright. Such an excellent start has now been made in fulfilling the requirements of mail contracts that there will very likely be a period during 1932 when little or no new shipbuilding will be ordered. For future delivery, we have 85 vessels aggregating in cost \$181,924,510 still to be placed on account of mail contracts alone. This building is a very definite program, which can be counted on.

Replacements.—Analysis of the age of American ships (*Marine Review* for October) shows immediate need of replacements of outworn, obsolete merchant vessels. Thus, replacements alone, due to the comparative holiday in shipbuilding since the war, will require a substantial shipbuilding program. The analysis shows that 457 vessels of 2,190,397 gross tons were 20 years or over in

age; constituting 34.5 per cent in numbers and 30.7 per cent in gross tonnage of the 1323 vessels tabulated.

Cargo Ships.—Not a single ocean cargo ship was under construction in American shipyards during 1931. An active program in building cargo ships cannot long be delayed. Tanker building also, was largely in abeyance. Life of a tanker is perhaps not over one-half that of a cargo or passenger ship.

Engineering Investigation.—In his annual address before the Society of Naval Architects and Marine Engineers in New York, Nov. 19-20, 1931, J. Howland Gardner, president of the Society, announced the appointment of a committee of engineers and business men to conduct an investigation of every phase of shipping and shipbuilding. This committee is to determine the minimum cost of building ships in the United States as a basis for comparison with the cost of construction abroad. Tonnage needs of American ship operators for maintaining an efficient fleet will also be estimated. Study will be made of the differentials in cost of construction and operation between the United States and foreign nations for the purpose of making definite recommendations for equalizing these costs.

West Coast Shipyards.—One phase of our shipbuilding program is the complete absence of orders placed on the West Coast. Mr. Gardner pointed out in his address that some practical method should be found to equalize the comparatively small differential enjoyed by East Coast shipyards, due to their proximity to raw material. We cannot afford to let our West Coast shipyards lapse; they should be fostered for the benefit of the nation as a whole.

Great Lakes.—Lack of shipbuilding on the Great Lakes was particularly noticeable during 1931. No large vessel of any character was under construction during the period. Trade on the Great Lakes was such that employment could be found for only a proportion of the existing fleet. Analysis of age of ships, brings out the fact that the proportion of old vessels is far greater there than elsewhere. Thus recovery from the present economic depression will undoubtedly see the beginning of a substantial program of new construction.

PROPELLING MACHINERY DEVELOPMENTS

New Tug Drive.—An interesting engineering development took place in smaller craft for Great Lakes use; the installation of turbine reduction geared drive and oil burning water-tube boilers on the tug *Harry B. Williams*, built by the Manitowoc Shipbuilding Corp. for the Great Lakes Dredge & Dock Co., Chicago, marking the first time that this type of drive has been installed in a vessel of this class. Its success in practical operation will have an effect in future on the choice of power for large tugs.

Lake and Barge Canal Freighters.—Another interesting development was the building and completion at the Great Lakes Engineering Works, River Rouge, Mich., of two powerful lakes and barge canal freighters for the Ford Motor Co. They are of 300 feet length, 43 feet beam, and 20 feet depth. Cargo capacity is 1800 tons. Propelling machinery consists of turbine geared drives of 1600 horsepower supplied to twin screws. Working steam pres-

sure of 425 pounds per square inch and of 200 degrees superheat is supplied by oil burning, marine water-tube boilers of water-wall type.

Turbine Electric Liners.—Our outstanding shipbuilding achievement in 1931 was the completion of the two turbine electric liners *President Hoover* and *President Coolidge*, by the Newport News Shipbuilding and Dry Dock Co. for the Dollar Steamship lines for service between New York and the Orient via the Panama Canal and West Coast ports. They are the largest vessels so far completed for merchant service ever built in the United States. They are sister ships in general characteristics and arrangement. Both are fitted with turbine electric machinery; in the case of the *President Hoover* the propelling machinery and most of the major auxiliaries were supplied by the General Electric Co.; in the *President Coolidge*, by the Westinghouse Electric & Manufacturing Co. The ships are, therefore, large scale practical demonstrations of the up-to-date developments in electrical ship drive. The propelling machinery consists of two turbine generator sets of 10,100 kilowatts at 2660 revolutions per minute. The two main propelling motors are of synchronous induction type of 10,100 kilowatts at 133 revolutions per minute and 4800 volts. Each motor is directly connected to a propeller shaft delivering 13,250 shaft horsepower or a total of 26,500. On the standardization trials, the mean of the five top runs for the *President Hoover* gave a speed of 21.558 knots. The high speed attained was 22.2 knots with the propelling machinery developing a total of 32,537 shaft horsepower at average revolutions per minute of 143.36. In a paper presented at the annual meeting of the Society of Naval Architects and Marine Engineers, on recent developments in electrical propulsion, by Eskil Berg of the General Electric Co. and Charles F. Bailey of the Newport News Shipbuilding and Dry Dock Co., attention was called to the excellent results obtained in these two liners with electrical propulsion supplied independently by the two

electrical companies without consultation or conference with each other except through the shipbuilder.

U. S. Mail Steamship Electrical Liners.—The same type of drive was specified for the six vessels building for the United Mail Steamship Co. Three of these, the *Talamanca*, *Segovia*, and *Chiriqui*, are being built by the Newport News Shipbuilding and Dry Dock Co. The other three, the *Antigua*, *Quirigua*, and *Veragua*, are being built by the Bethlehem Shipbuilding Corp. at the Fore River plant, Quincy, Mass. The six vessels are alike in major features. Length overall is 447 feet; beam, 60 feet; load draft, 24 feet 6 inches; displacement, 10,775 tons. Electrical propulsion machinery, made by the General Electric Co., consists of twin turbine generators to give 10,500 horsepower to twin screws, each driven by a three-phase, synchronous induction motor of 5250 shaft horsepower at 125 revolutions per minute. One of the turbine generators can deliver 5500 horsepower to the motors at 102 revolutions per minute which is ample power for cruising speed. In this way unusual economy is possible as the service of the ship is likely to call for lesser speed during long periods. Anticipated sea speed is about 18 knots. All spaces for cargo are insulated, and refrigerated air is circulated for carrying fruits, particularly bananas. There is also a separate refrigerating plant for use with a special cargo space. General cargo handling is facilitated by especially large hatches for No. 2 hold. Accommodations are provided for 115 first class passengers. A number of the staterooms are single. These vessels in many respects represent the latest in naval architecture and marine engineering.

THE DIESEL ENGINE

Diesel vs. Steam Power.—The engineering battle between Diesel and steam power continued throughout 1931, the significant feature being that the steam forces have been spurred to intensive effort to increase economy of performance through the use of higher steam pressures and super-

heat. Less than six-tenths pound of fuel oil per horsepower per hour is now possible in the latest marine steam installations. On trial the *President Hoover* with turbine electric drive, and without taking advantage of the range of modern steam conditions, attained a fuel consumption of .669 pound per horsepower per hour. This may be compared with .45 pound of Diesel fuel per horsepower per hour for all purposes for marine Diesel engine installations. This still represents quite a difference in the utilization of heat. It must be pointed out, however, that under certain conditions the fuel oil burned under boilers costs much less than Diesel fuel, consequently, the greater thermal efficiency of the Diesel engine may in some cases be offset by the higher fuel costs. The Diesel engine with its high thermal efficiency has performed a service of the greatest value through forcing the ablest minds in steam engineering toward progress in fuel reduction.

Diesel Construction.—Europe continues to adopt the Diesel engine for over 50 per cent of all new construction. The figures issued by Lloyd's as of Sept. 30, 1931, show that for world ship construction 776,431 gross tons were being fitted with the Diesel engine and 754,689 gross tons with other types of power. Only 13,007 gross tons under construction in the United States at the end of September were motorships. It may be expected, when a program of cargo ship and tanker building is resumed, that the Diesel engine will find considerable favor. It is apparent, however, that from 1000 horsepower down, the Diesel engine is finding widespread acceptance in the United States, in all types of commercial craft and especially so in yachts. An analysis prepared by *Marine Review* on types of motive power in commercial vessels of steel above 100 feet in length proves this statement. Out of 130 vessels so listed under construction at some stage in 1930, no less than 60 were fitted with Diesel engines as primary power. In the preceding year, out of 145 vessels listed, 80 were fitted with Diesel power.

Considering all types of commercial vessels built of steel, 100 feet and over in length, about 50 per cent in number were equipped with Diesel power. The proportion for 1931 is likely to be the same. It was found, however, that the 60 units with Diesel power represented only 131,303 gross tons or about 25 per cent of the total gross tonnage of the 130 vessels listed. The proportion is still less in Diesel horsepower as compared with the total horsepower of the 130 vessels, in this case, a total of 64,495 horsepower or 12.65 per cent of the total horsepower of all the units.

RIVER VESSELS

Towboats.—During 1931 the *Herbert Hoover*, one of the most powerful towboats designed for river work, was built for the Inland Waterways Corp., a government owned and operated line, by the Dubuque Boat and Boiler Co. This vessel is propelled by two propellers, operating in partial tunnels, directly connected to McIntosh & Seymour Diesel engines, each rated at 1100 brake horsepower at 200 revolutions per minute. Total maximum horsepower possible is 2600. The *Herbert Hoover* is 226 feet 4¾ inches in length; 43 feet 6 inches beam; 10 feet depth; and operates on a draft of 6 feet. Fuel consumption is 41 pound per horsepower per hour. The boat is capable of towing upstream 10,000 tons of freight at an average speed of over four miles. Regular run is between New Orleans and St. Louis. Two similar vessels are planned.

Craft for Special Services.—One such is to be noted in the New York City fireboat *John J. Harvey*, completed at the Teboe plant of the Todd Shipyards Corp., Brooklyn, N. Y. This boat, said to be the largest and fastest of its type ever built, is a twin screw, gasoline-electric all steel vessel, 130 feet in length overall, and 28 feet in beam. Power for both propulsion and pumping is supplied by five Sterling Viking gasoline engines developing a total of 2740 horsepower, direct connected to generators. Electric current may be applied to the two main propelling motors, each di-

rect connected, and giving the vessel a speed of 18 miles an hour. Current can also be used for pumping power for the eight nozzles delivering 16,000 gallons of water a minute.

OCEAN LINERS

S. S. Manhattan.—Launching of the *Manhattan*, first of two transatlantic liners under construction by the New York Shipbuilding Co. at Camden, N. J., for the United States lines, took place December 5. She is the largest merchant vessel so far launched in the United States. Her gross tonnage will be slightly over 30,000 tons. Propulsion will be by twin screws driven by triple series turbines and single reduction gears, developing 34,500 maximum shaft horsepower and a sea speed of 20 knots. Length overall is 705 feet.

New Matson Liners.—Three vessels are under construction by the Bethlehem Shipbuilding Corp. at its Fore River plant, Quincy, Mass. for the Matson Navigation Co., the *Mariposa*, the *Monterey* and *Lurline*. These three sister vessels costing \$25,000,000 are built to the highest classification of the American Bureau of Shipping, as are all the vessels mentioned in this article. Each is 631 feet 6 inches in length overall; and of approximately 20,000 gross tons. A speed of 20 knots, loaded, is anticipated. The twin screw propelling machinery is of the impulse reaction type, geared turbines developing about 22,000 shaft horsepower at 125 revolutions per minute. Steam at 375 pounds per square inch and total temperature of 640 degrees Fahr. is supplied by 12 Babcock & Wilcox watertube boilers fitted with superheaters. A fuel oil capacity of 6300 tons will give a steaming radius of about 20,000 nautical miles.

Rebuilding.—Important rebuilding or conversion work was accomplished for the Baltimore Mail Steamship Co. by the Federal Shipbuilding & Dry Dock Co., at Kearny, N. J., on five ships; the *City of Baltimore*, *City of Norfolk*, *City of Newport News*, *City of Havre* and *City of Hamburg*. The first named on sea trials, averaged

MATERIALS OF ENGINEERING AND CONSTRUCTION

17.77 knots. The fifth and last vessel was scheduled to enter service Dec. 16. All are engaged in fast freight, mail and passenger service between Baltimore, Hampton Roads, Havre and Hamburg. Conversion included lengthening to 506 feet. The beam is 56 feet and displacement about 15,000 tons. Hull lines were modified and new machinery, De Laval cross compound, double reduction geared turbines of 9500 horsepower, were installed. High pressure steam is supplied by four watertube boilers. Staterooms are provided on the upper decks amidships for 81 passengers.

Conversion, of existing Hog Island type freighters, was carried out in the *Delnorte* and *Delsud* for the Mississippi Shipping Co., New Orleans, at a cost of \$1,000,000 for both. Two

more, the *Delvalle* and *Delmundo* are being similarly converted. The entire bridge superstructure was rebuilt and equipped for passenger accommodations. Propelling machinery was remodeled so that the speed was increased from less than 11 to better than 13 knots. New auxiliary machinery was installed and the outline of the ships so changed as to present an entirely different and much more pleasing appearance than formerly. As an aid to speed and maneuvering, a Contra type rudder was fitted on the *Delnorte* and an Oertz type rudder on the *Delsud*. Through the use of a veranda plan of quarters developed by George C. Sharp, New York naval architect, there are no inside cabins. All opening on the verandas are equipped with private baths.

MATERIALS OF ENGINEERING AND CONSTRUCTION

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TECHNICAL ASSISTANT, AMERICAN SOCIETY FOR TESTING MATERIALS

INTERNATIONAL CONGRESS

The first Congress of the new International Association for Testing Materials, Zurich, September, 1931, marked definite progress in international exchange of information on materials and testing, resumed for the first time since the World War with an organization meeting in Amsterdam, 1927. Upwards of 140 papers were presented including 18 by American members which will appear in Congress *Proceedings* in the language of the author (English, French or German) with summaries in each language. The American papers dealt with alloy steels, cast iron, inclusions in metals, metallographic progress, comparison of welded and riveted joints, thermal analysis; cement, concrete, stone, bitumen, turpentine, weathering tests of organic coatings, fuel sam-

pling; testing machines, particle size determination, elasticity and plasticity, toughness and brittleness.

SLIP IN PLASTIC MATERIALS

The causes of certain types of failures in mechanical constructions and the mechanisms of rupture in solid materials are closely related to the phenomena of plastic flow. Dr. A. Nadai in the Edgar Marburg Lecture for 1931 (Am. Soc. Testing Mats., *Proceedings*, vol. 31, II, p. 11, 1931) discussed the relation between slip lines observed on the polished surface of severely stressed specimens and the stress distribution, and pointed out a most interesting mathematical analogy between stress distribution in a plastic body when flow begins and the form of sand piles on irregular base surfaces. The laws of formation of these slip lines and of

plastic layers are being studied. (See also A. Nadai, *Plasticity*, McGraw-Hill Co., Inc., New York, 1931).

METALS

Effect of Temperature.—The very high and very low temperatures at which metals are being used today, or for which the engineer is demanding more suitable metals from the metallurgist and the testing engineer, represent environments greatly different from those normal environments under which we have customarily determined the properties and behavior of metals. Previous reviews have discussed this important subject (see *THE AMERICAN YEAR BOOK*, 1925, p. 843; 1926, p. 827; 1928, p. 629). In 1924 a compilation of the then available data on materials by the American Society of Mechanical Engineers and the American Society for Testing Materials led to the establishment of a Joint Research Committee to foster study, facilitate exchange of information and carry out research on fundamental problems. Progress since then led to a symposium this year sponsored by the Research Committee, in which are presented: first, engineering trends and requirements both here and abroad for high and low temperature services in the power plant, oil refining, metallurgical, automotive and ceramic industries; and second, a comprehensive digest of the properties of the metals available for these services, including zinc, aluminum and magnesium alloys, copper and its alloys, cast iron, wrought and cast steels, austenitic alloys, iron-chromium-nickel and other nickel and chromium alloys, nitrided alloys and the rare metals. The *Symposium Book* (850 pp.), published by the two societies, is the most complete treatise on the subject so far attempted.

While chromium and nickel are the vital elements in a large proportion of the alloy steels used for high temperature, the tendency towards embrittlement of certain of these alloys presages their modification in some particulars, as by the introduction of molybdenum, tungsten or cobalt.

Nitrided steels show excellent high-temperature properties. The automotive engineer would be receptive to beryllium-aluminum piston alloys and the replacement of babbitt metals for severe service by new types of bearing alloys. The inability of properties determined by "short-time" tests always to predict behavior under long sustained loads with resultant "creep" is clearly brought out. Increasing doubt is being thrown on the existence of a "creep limit," and comparisons are now more commonly made on the basis of a defined rate of creep. Corrosive conditions may often have a controlling influence on the performance of metals at high temperatures.

From the broad engineering viewpoint, the keynote of the whole symposium lies in the fact that the engineer, who now states immediate requirements beyond what can be supplied, must in the future make these requirements still more stringent, demanding metals of still better properties at economically feasible prices. Truly the task of the metallurgist in this field will be never-ending.

Fatigue of Metals.—It is not yet possible to state with certainty, even for the most generally used commercial alloys, whether failure at high temperatures is more liable to occur under repeatedly applied stresses (fatigue tests), as at atmospheric temperatures, or under sustained loading (creep tests). Fatigue tests on low-carbon boiler steel having an endurance limit of 30,000 lb. per sq. in. at room temperature show an increase in this limit at 550° F. to 39,000 lb.; but at 850 and 1200° F. the endurance limit has dropped to approximately 28,000 and 8,000 lb. per sq. in., respectively. While the studies are not completed, there are indications that the endurance limits so far ascertained are somewhat above the limiting stress for a flow under sustained loading of one per cent in 10,000 hours. (*Am. Soc. Testing Mats., Proceedings*, vol. 31, I, p. 114, 1931.)

Studies of fatigue properties of

three brasses, 80 copper-20 zinc, 70-30 and 60-40, by J. B. Kommers (Am. Soc. Testing Mats., *Proceedings*, vol. 31, II, p. 243, 1931), show endurance limits of from 21,500 to 30,000 lb. per sq. in. depending on condition of the metal, the most favorable condition generally being cold worked followed by low-temperature anneal, which was found also remarkably to increase the elastic limit under static stress. The ratio of endurance limit to tensile strength is quite variable, ranging from 0.30 to 0.50, and there is no consistent relation between other static stress properties and fatigue strength.

Some data on fatigue strength in shear of copper, brass (approximately 60-40) and duralumin are reported by H. F. Moore and R. E. Lewis (Am. Soc. Testing Mats., *Proceedings*, vol. 31, II, p. 236, 1931),—a much needed contribution in view of the meager information in this field. For completely reversed stress in torsion these materials have shearing endurance limits of 10,000, 14,000 and 12,000 lb. per sq. in., respectively. These values are approximately 70 per cent of the endurance limits for reversed flexure, a ratio distinctly higher than the average for ferrous metals, about 50 per cent.

Corrosion.—Excellent progress in the soil-corrosion studies (see THE AMERICAN YEAR BOOK, 1927, p. 577) is reported in examinations of 1,300 specimens of ferrous pipe materials from 70 test locations and of specimens of non-ferrous materials and metallic-protective coatings from 45 soils after exposure of from four to six years (Bureau of Standards, *Research Papers Nos. 329 and 359*, vol. 7, July, and September 1931). The data indicate that materials must be chosen to fit the soil since no one material, either ferrous or non-ferrous, is best for all soil conditions, but at present are not sufficient to justify a definite comparison of materials.

A wealth of information gathered by producers of corrosion-resistant and heat-resistant alloys as the result of years of application of their

alloys to a variety of industrial needs has been compiled (see Tables of Chemical Compositions, Physical and Mechanical Properties, and Corrosion-Resistant Properties of Corrosion-Resistant and Heat-Resistant Alloys, Am. Soc. Testing Mats., *Proceedings*, vol. 30, I, 1930). This valuable compilation of data on the commercially available metallic alloys will be of inestimable value in the design of equipment for modern processes.

Tool Steel.—A study of the relations of hardness, strength, plasticity, and microstructure of tool steel by J. V. Emmons (Am. Soc. Testing Mats., *Proceedings*, vol. 31, II, p. 47, 1931) has thrown some light on the unexplained behavior of hardened steel. Strength and plasticity were measured by means of a torsion test and the results show that hardness will not be proportional to strength except as a coincidence and that maximum plasticity will not occur with maximum strength nor with maximum hardness. The data afford a general knowledge of the response of mechanical properties of hardened tool steel to variations in heat treatment and from this knowledge it is possible to plan heat treatments so that available combinations of properties may be used to best advantage.

Welding (localized consolidation of metals by means of heat) has become one of the most important problems today in the fabrication of metals. The introduction of a variety of metals and highly alloyed steels has necessitated the development of special technique in processes of joining metals such as welding, soldering and brazing, some of which are described in current literature (*Metals and Alloys*, November, 1931). A symposium on welding has been published (Am. Soc. Testing Mats., Pittsburgh Regional Meeting, March 1931) which discusses quality of base and weld metals, strength, ductility and resistance to corrosion of welds, effect of welding on adjacent base metal, and inspection and testing of welded products.

One of the inherent difficulties in the introduction of welding into commercial processes is that of practical examination of the weld to be certain of its soundness. The symposium describes several methods of non-destructive examination. The ordinary physician's stethoscope has been successfully used to detect defects in welds by noting the variation in vibrations induced by tapping the welds with a light hammer. Another method makes use of the fact that a high magnetic reluctance is developed at faults in a weld subjected to high magnetic flux. x-ray examination (see *THE AMERICAN YEAR BOOK*, 1927, p. 581) is also used in inspection of welds. The newly developed use of the gamma ray obtained from radium or radio-active material is most promising, for it has greater penetrability than the x-ray and the portability of the apparatus that has been developed is a great convenience practically.

Resistance of welds to impact and fatigue stresses is often an extremely important characteristic, especially for various types of vessels operated under pressure. Fatigue properties of low-carbon arc electrode weld metal, hand welded (as distinguished from strength of a welded joint,—see *THE AMERICAN YEAR BOOK*, 1930, p. 633), are reported by R. E. Peterson and C. H. Jennings (*Am. Soc. Testing Mats., Proceedings*, vol. 31, II, p. 194, 1931) who find that the direction of deposition of metal has small effect, that peening increases fatigue strength, and that annealing at 1700° F. results in coarser grain structure and lower strength. Endurance limits found for this grade of weld metal ranged from 12,000 to 20,000 lb. per sq. in.

Nickel-Clad Steel.—An interesting application of the joining of metals is in the manufacture of nickel-clad steel plate (*Am. Inst. Mining and Metallurgical Engrs., Transactions*, 1931). Sections of nickel and steel are placed in intimate contact, heated to high temperature and rolled to finished plate, thus bonding the

metals by formation of solid solutions at plane of contact. Failure of the metals to bond is evidenced by differences in spread during rolling. The material, designed to fill the growing need for containers and similar structures requiring special corrosion-resisting properties, presents no special difficulties in forming, riveting or welding.

Malleable Iron Castings.—The need for reliable engineering data on the properties of modern cast metals has led the American Foundrymen's Association and the American Society for Testing Materials to begin the compilation of such data from various authoritative sources, starting with malleable iron castings and extending to carbon and alloy steel, gray iron and non-ferrous metals.

The information given on malleable castings (*Am. Soc. Testing Mats., Proceedings*, vol. 31, II, p. 317, 1931) includes: general data on manufacture; average chemical composition, physical constants, and mechanical, electrical and magnetic properties; machineability; microstructure; heat treatment; resistance to corrosion. For the properties usually determined commercially, the averages reported (based on upwards of 20,000 tests) are tensile strength 54,000 lb. per sq. in., yield point 36,000 lb. per sq. in., elongation in 2 in. 18 per cent. Higher strength malleable iron, for which there is particular demand in the railroad industry, is reported with average properties of 57,000 lb. tensile strength, 38,000 lb. yield point and 23 per cent elongation. In the automotive industry less emphasis is placed on strength and more on machineability. Reference is made to the extensive use of cupola process iron in the pipe fittings industry.

New Aluminum Alloy.—A new wrought aluminum alloy, containing 1 per cent each of manganese and magnesium, and having a strength midway between commercially pure aluminum of 12,000 lb. per sq. in. and aluminum-manganese alloy of 60,000 lb. per sq. in. and a high endurance limit of approximately 14,000

lb. per sq. in. has been developed (*Metals and Alloys*, October, 1931, p. 238). The alloy is not susceptible to heat treatment, but exceptional cold-working properties produce the desired improvement in mechanical properties. Oxide coatings and metal electroplatings may be applied in fine grain structure to the alloy, which also welds readily. Good corrosion resisting characteristics, together with the physical strengths attainable by cold working, will probably open the door to many new applications where absence of one or the other of these characteristics had previously prohibited the use of aluminum.

Effect of Strain and Heat Treatment on Copper Alloys.—An attempt to develop combinations of higher strength and conductivity than are obtainable by heat treatment alone in the age-hardening copper alloys is described by W. C. Ellis and E. E. Schumacher (*Am. Inst. Mining and Metallurgical Engrs., Transactions*, 1931), who investigated the effects of combinations of heat treatment and strain hardening. Copper alloys studied contained nickel and silicon; nickel, silicon and cadmium; and cobalt and silicon. Hard drawing subsequent to heat treatment materially increased the strength without appreciably increasing the resistivity of copper alloys containing either nickel and silicon or cobalt and silicon. No improvement in strength resulted from adding cadmium. The aging of heat-treated and hard-drawn wires at temperatures below 500° C. increased the conductivity in alloys containing both nickel and silicon, and cobalt and silicon, being decidedly greater in the former, while above 300° C. the tensile strength was adversely affected.

NON-METALS

Mass Concrete.—Factors influencing temperatures developed in mass concrete and their effect upon the compressive strength are summarized by R. E. Davis and G. E. Troxell (*Am. Concrete Inst., Journal*, vol. 2,

January, 1931, p. 385; also *Am. Soc. Testing Mats., Proceedings*, vol. 31, II, p. 576, 1931) in presenting results of field observations on large structures and laboratory tests on 3-ft. and smaller insulated cubes. Maximum temperature in small specimens may be reached in less than 24 hours while in large masses the heat of delayed hydration may be generated sufficiently slowly to increase temperature for several weeks. Rise in temperature is proportional to quantity and quality of cement, temperatures of 100° F. having been observed, and due to temperature the early strength was high but subsequent gain in strength was less than for concrete cured under normal conditions. The authors point out that in mass structures when the temperature rise is large it becomes an important factor to reckon with, not only because of the deformations and stresses which it may produce within the structure but because of the possible effects during the curing period upon the properties of the concrete. A need for further research in this important field is emphasized.

Central Mixing Concrete.—With the continued use of central mixing plants in concrete construction (see *THE AMERICAN YEAR BOOK*, 1930, p. 631) transportation of mixed concrete from the plant to the construction job has been found to be the most difficult problem. With the purpose of determining the relation between strength and time of retention in the drum of the conveyor, W. A. Slater (*Am. Soc. Testing Mats., Proceedings*, vol. 31, II, p. 510, 1931) contributes valuable data on ready-mixed concrete transported for periods varying from a few minutes to 2½ hours in an agitator drum without mixing blades. Samples taken from the drum at intervals showed a progressive stiffening of the mix, which originally had a slump of about 8 in., and after 2½ hours could have been used quite satisfactorily for road or pavement work. No loss of water or other ingredients occurred, but the apparent cement available

increased with extended mixing while the sand apparently decreased, effects attributed to pulverizing of the aggregates. There was no evidence of segregation and the compressive strength increased progressively according to the length of time of transportation.

Analysis of Concrete.—Special attention has been paid during the year to methods of analyzing concrete both in the fresh and hardened conditions. A test for determining net amounts of ingredients in a batch of fresh concrete from an analysis of a sample has a definite place in present day practice, a few fields of application being the ready-mixed concrete industry; strength specifications based upon water-cement or space-cement ratios; and researches into workability and uniformity factors of concrete for securing the information which such a test will give. A test has been proposed by W. M. Dunagan (Am. Soc. Testing Mats., *Proceedings*, vol. 31, I, pp. 362 and 382, 1931) in which the relative amounts of water, cement, fine and coarse aggregates present in fresh concrete, are obtained in the field with a reliable degree of accuracy by means of the buoyancy principle. A method of determining the cement content of hardened concrete by chemical methods of analysis which should be of considerable value in analyzing concrete after placement, the constituents or mix of which may be in doubt, was issued as tentative (Am. Soc. Testing Mats., *Proceedings*, vol. 31, I, p. 763, 1931). Considerable supporting data on the method and a bibliography has been prepared by H. F. Kriege (Am. Soc. Testing Mats., *Proceedings*, vol. 31, I, p. 386, 1931).

Permeability of Gravel Concrete.—Data on permeability of concrete, of paramount importance in concrete construction, have been rather limited and many existing data could not be analyzed to show the relation between watertightness and other properties. Studies of 34 mixes of gravel concrete, specimens 6 by 12 in. under 40 lb. per sq. in. pres-

sure for 50-hour periods, by P. T. Norton and D. H. Pletta (Am. Concrete Inst., *Journal*, vol. 2, May, 1931, p. 1093) indicate that permeability increases as water-cement ratio increases but is influenced considerably by consistency and grading of aggregate. Permeability results are qualitative rather than quantitative and in these tests the flow included the water absorbed by and that flowing through the specimen, each series being repeated five times to eliminate variables. Permeability decreases as strength and cement-void ratio increase. No relation is indicated between permeability and absorption.

Reinforced Concrete Column Tests.—Investigations on reinforced concrete columns under auspices of the American Concrete Institute, under way at the laboratories of the University of Illinois and Lehigh University, cover concrete columns with longitudinal or lateral reinforcement or both, the columns being 8 in. in diameter and 5 ft. long, supplemented with columns up to 28 in. in diameter and 7.5 times the diameter in length. Three progress reports have been made (Am. Concrete Inst., *Journal*, vol. 2, February and March, 1931, vol. 3, November, 1931) on investigations to determine end conditions; on strength of reinforced columns tested directly to failure by two rates of loading, and on effect of long-time loading; and on a comparison between intermediate grade and drawn-wire spiral reinforcement. Superiority of columns with continuous bars flush with concrete surface and without capitals was shown by preliminary tests and adopted for the investigation. The strength of columns with longitudinal and spiral reinforcement is made up of three factors: (1) strength of the concrete, equal to the net area within the outer circumference of the spiral times 85 per cent of the compressive strength of the test cylinders; (2) strength of longitudinal reinforcement, equal to its area times yield point stress; and (3) strength added by spiral reinforcement, which is about 70 per cent of the strength of an equal amount

of longitudinal reinforcement of intermediate steel. The yield point of the columns appears to be practically independent of the amount or kind of spiral reinforcement, the margin of strength above the yield point being much greater with drawn wire than with hot-rolled spirals, although deformations were correspondingly larger. A further series of tests will be made to study the effect of continuously applied loads at intensities approaching the ultimate strength of the columns, with strains being measured at intervals and finally the strength of the column determined.

Paving Concrete.—Elaborate studies on paving concrete made by the U. S. Bureau of Public Roads which were unique in that they combined laboratory accuracy with field facilities to study actual conditions are described by F. H. Jackson and W. F. Kellermann (Am. Soc. Testing Mats., *Proceedings*, vol. 31, II, p. 457, 1931). The results throw light on many questions which have been engaging the attention of highway engineers and the conclusions outlined by the authors are based on comprehensive and convincing data. The purpose of the tests was to investigate the value of added coarse aggregate, beginning with a 1:2:3½ concrete and going to 1:2:5¼ with different aggregates and consistencies and varying the type of finishing. The test specimen was a 9-ft. width of concrete road slab approximately one-half mile long divided up into 256 lengths 9 ft. long and 7 in. deep each made of a different mix. Tests on beams cut from slabs as well as on separately molded beams and cylinder showed that workability and uniformity in strength of the concrete decreased in proportion to amount of coarse aggregate added. For concrete reasonably free from honeycombing the strength of the control beams satisfactorily measured the slab strength, but neither the amount of honeycomb in the drilled cores nor the crushing strengths developed by the drilled cores measured the extent of honeycomb in the slab or the flexural strength of the slabs.

The authors recommended that all specifications for pavements contain a definite consistency requirement, the slump test being recommended, and the slump to be not below 2 in. for best results.

Bituminous Paving Emulsions.—Emulsified asphalt used almost entirely for many years in cold asphaltic mixtures, is now coming into general use for road mix and penetration type of construction work. These quick-setting emulsions differ radically in composition and in physical characteristics from the earlier emulsions so that the development of new test methods has been necessary in order to differentiate between suitable and unsuitable products of the new types. An able presentation of the subject of emulsions of the quick-setting type has been made by C. L. McKesson (Am. Soc. Testing Mats., *Proceedings*, vol. 31, II, p. 841, 1931) which includes suggested properties and test methods. The test methods include a washing test to determine the degree to which the asphalt has set in a given period of time, a settlement test to determine the tendency toward sedimentation, and the Myers' demulsification test. Distillation, viscosity, residue and evaporation tests also are desirable and for mixing emulsions, tests for miscibility and stone coating properties are suggested.

Masonry Building Units.—in presenting an analysis of test data on large construction of clay hollow units, D. E. Parsons (Am. Soc. Testing Mats., *Proceedings*, vol. 31, II, p. 595, 1931) showed that factors other than the strength properties of building units have a marked influence on wall strength. For end-construction masonry, the proportion of the gross sectional area bedded in the mortar is an important factor, while in side-bearing construction the design features of the units appear to be of direct importance as does the flexural strength of the shells.

On the contrary, F. E. Richart, P. M. Woodworth and R. B. B. Moorman (Am. Soc. Testing Mats., *Proceedings*, vol. 31, II, p. 661, 1931)

show that the compressive strength of walls is closely dependent upon the strength of the units, with an average ratio of wall to block strength of 0.53, in presenting results of tests of 60 walls, 6 ft. long by 9 ft. 6 in. high and 42 small walls 2 ft. 8 in. long and 4 ft. high. The ratio of strength of large and small walls was found to be fairly constant, about 0.91. The effect of variables, such as type of aggregate, strength of mortar and thickness of walls, was indefinite. Composite walls of face brick and concrete units showed satisfactory behavior and strength.

A comprehensive and systematic investigation of the fire-resistant and load-carrying properties of walls of concrete masonry units reported by C. A. Menzel (Am. Soc. Testing Mats., *Proceedings*, vol. 31, II, p. 607, 1931) also showed a linear relationship between the strength of masonry walls and the units before and after exposure to fire. One hundred walls of hollow concrete units were subjected to intense heat on one side and the fire-resistant property was determined by the temperature rise on the unexposed face to an average value of 250° F. or temperature at any point of 325° F. The tests indicated that the fire endurance period increased with the proportion of fine aggregate and with the cement content, but that grading should be based on strength of wall rather than fire endurance. With a given grading and cement content the type of aggregate used had an important effect on the fire endurance period. The period of an 8-in. wall was increased 30 per cent by a ½-in. coat of gypsum plaster on one face and 60 per cent by coats on both faces. Improvement in both endurance period and strength after exposure was obtained by more complete bedding at horizontal joints rather than by more complete filling of vertical joints.

Weathering of Masonry Materials.—The complex nature of weathering of masonry materials and its effects were pointed out (Symposium on Weathering Characteristics of Masonry Materials, Am. Soc.

Testing Mats., *Proceedings*, vol. 31, II, p. 715, 1931) in a résumé of the great variety of minerals and complex compositions entering into masonry materials as well as the multiplicity of conditions to which such materials are exposed. Millions of dollars annually are spent in the repair, upkeep, rebuilding or major re-vamping of buildings or other structures because of weathering damage. Examples noted included \$100,000 for repairs to a building in the east, another tall building which will have to be torn down and a \$200,000 expenditure for a third. Moisture penetration was pointed out as the big factor in surface disintegration or decay of masonry materials, regardless of the exact source or character of decay, and the importance of taking every means of preventing moisture penetration from any source whatever was emphasized. Frost, efflorescence, soot and biological action are a few of the other decaying agencies against which designers take too little precaution.

A study of the mechanism of weathering of structural clay products and of concrete aggregates (Am. Soc. Testing Mats., *Proceedings*, vol. 31, II, pp. 435 and 745, 1931) indicates the possibility of developing an accelerated freezing and thawing test which will provide a definite measure of durability and justifies further research.

Reinforced Brick Masonry.—The composite use of steel with brick masonry, in a manner comparable to the construction of reinforced concrete, is being studied quite actively by the National Brick Manufacturers Research Foundation (*Bulletin* No. 2, October, 1931), although it is not new, metal reinforcement having been embedded in brick masonry 100 years ago and since used for major structures principally in India and Japan. The steel rods are built into the masonry in such a way as to provide a bond between brick and steel by means of the mortar. Load tests to destruction have been made on test slabs typical of standard building construction, but much more tech-

nical data are required to establish adequate theories of design of the various forms of masonry such as walls, columns and beams. This type of masonry construction has some interesting possibilities.

Bond Between Mortar and Brick.—Researches in the field of brick and brick masonry at the U. S. Bureau of Standards (see *THE AMERICAN YEAR BOOK*, 1929, p. 629) have continued to furnish valuable information. Studies of durability and strength of bond between mortar and brick by L. A. Palmer and J. V. Hall (Bureau of Standards, *Research Paper No. 290*, vol. 6, March, 1931, p. 473) indicate that failure is not due to disintegration of either brick or mortar but that such factors as pressure on the mortar joint, type of mortar used, degree of wetting the brick and apparent shrinkage of mortar were of more importance. Over 1200 brick-mortar units were tested including five makes of brick and two mortars, a 1:1:6 of lime, cement and sand and a 1:3 of cement and sand by volume. Alternate freezing and thawing for 50 cycles of moisture-saturated units, followed by drying, constituted the tests for bond durability. Failures of unloaded units being twice that of loaded ones are interpreted as indicating that bond failure is likely to occur in vertical joints in masonry, thus suggesting a minimum of such joints adequately protected.

TESTING

Magnetic Testing.—Methods of non-destructive testing have become of foremost industrial importance as there are unquestionably many engineering problems that will benefit as this important fundamental research is developed into a practical engineering tool. Haakon Styri (Am. Soc. Testing Mats., *Proceedings*, vol. 31, II, p. 94, 1931), in reporting results on a steel of standard ball-bearing analysis heat treated over a wide range, shows that four magnetic methods give direct correlation with hardness and impact strength and that the latter decreases with increase in hardness. With properly selected

standards and apparatus, the uniformity of heat treatments can be controlled by magnetic methods with accuracy equivalent to those by mechanical control methods. Methods of thermomagnetic analysis have been used by R. L. Sanford and G. A. Ellinger (Am. Soc. Testing Mats., *Proceedings*, vol. 31, II, p. 83, 1931) to investigate the influence of particle size and distribution of iron carbide on the magnetic A_0 transformation in a 0.75-percent-carbon steel. The increase in intensity of magnetic transformation with decreasing particle size appears to show that the presence of carbide, however finely dispersed, is indicated by thermomagnetic analysis. As a method for studying the structure of steel and the transformations associated with its heat treatment, thermomagnetic analysis holds great promise.

Damping Capacity of Materials.

—The property of engineering materials, especially metals, to dissipate energy when subjected to cyclic stresses below the fatigue limit is known as mechanical hysteresis effect or damping capacity. In describing several methods of determining damping capacity G. S. von Heydekampf (Am. Soc. Testing Mats., *Proceedings*, vol. 31, II, p. 157, 1931) shows that it is not only important in cases of direct application, such as resonance vibrations, but deserves attention as a novel method of investigating the elastic behavior in the range of low stresses. One method uses a power driven oscillator arm which bends a specimen of the metal back and forth, the power used to drive the arm to a known amplitude of swing being measured. Recent tests indicate that damping capacity is a measure of dynamic ductility, which should be coordinated with the fatigue limit in the same way that tensile strength and elongation are considered.

High-temperature Characteristics Revealed by Bending.—A simple and inexpensive test method for investigating the plastic behavior of metals at elevated temperatures by an analysis of the curvature produced in an initially flat strip by

heating is described by Howard Scott (Am. Soc. Testing Mats., *Proceedings*, vol. 31, II, p. 129, 1931). The method has the distinctive advantages that strain observations are made at room temperature, that the test temperature is not restricted to the range of useful strength of available alloys, and that very minute plastic deformations can be detected and measured with considerable accuracy. The curvature of strip specimens is measured before and after heating to the test temperature while constrained to a uniform known curvature. The residual curvature which results from plastic deformation and the applied strain are important components of the tensile stress-strain curve. By correlation of the bending variables with the equivalent variables of the stress-strain curve, useful information can be obtained. Obviously, no residual curvature will be produced at normal temperatures until the applied strain exceeds that at the proportional limit of the metal. Hence by varying the applied strain at constant temperature the proportional limit or an equivalent property can be evaluated in strain units. These values of strain at the proportional limit obtained by bending should coincide with those obtained by the tension test if the basic principles of the bend test are sound. The modulus of elasticity being known, strain units can easily be converted into stress units. A critical temperature representative of the temperature range of useful strengths in metals can be readily determined by the bend test.

Low-temperature Testing.—

Difficulties encountered in developing apparatus for endurance testing at low temperatures are described by H. W. Russell and W. A. Welcker, Jr. (Am. Soc. Testing Mats., *Proceedings*, vol. 31, I, p. 122, 1931). The temperature, which must remain constant for periods up to 20 days thus requiring automatic temperature control, was chosen as -40°C . and suitable apparatus designed to maintain this temperature using solid CO_2 having a temperature of -79°C . as

the cooling agent. Control of heat generated by the testing machine and by internal work in the specimen was provided for by placing thermocouples about the specimen. A special lubricant had to be provided for testing machine bearings and the driving motor had to be isolated. Apparatus for determining tensile strength, Charpy impact and brinell hardness at low temperature also described were analogous to those of previous workers.

Flow of Concrete.—An ingenious device for measuring flow of concrete mixtures is described by D. M. Burmister (Am. Soc. Testing Mats., *Proceedings*, vol. 31, II, p. 554, 1931) consisting of a flow trough which confines the flow of concrete in one direction along the axis of a semi-cylindrical trough under the action of ten 1-in. drops. This device incorporates advantages of the slump cone and flow table and results are reproducible within narrow limits. Numerous tests showed close correlation with slump and flow-table results. The flow-trough test furnishes two figures indicative of the character of a concrete, namely, the flow at ten drops and a plasticity coefficient which as indices of workability can be used as a basis for the comparison of concretes and the design of concrete mixtures. A modified mortar flow trough for testing mortars and stuccos is also described. Other investigators (Am. Concrete Inst., *Journal*, vol. 2, January, 1931) in studying the flow table and the slump test show that slump gives a more suitable indication than flow of the increased workability of concrete produced either by enriching the mix or additions of admixtures, but that the flow table is more sensitive than the slump in differentiating between changes in the wetness of concrete.

Exhibit of Testing Apparatus.—

The first exhibit devoted solely to testing apparatus and machines was held in Chicago as a part of the annual meeting of the American Society for Testing Materials. There was shown new and improved testing apparatus developed in this country and abroad, including many special

devices exhibited by scientific bureaus and research laboratories. Emphasis was placed on technical and educational features.

STANDARDIZATION

Progress and Trends.—The progress noted in previous years in the more effective introduction of materials standards into industrial processes has continued during the year. The trend in specification work is towards simplification and standardization. Due to the highly competitive markets during the past year, buyers, consumers and producers made added use of the valuable information and the specifications and recommended practices published by such national societies as the American Concrete Institute, Society of Automotive Engineers, American Society for Steel Treating and the American Society for Testing Materials.

New Specifications and Testing Methods.—Thirty-eight new specifications and methods of testing issued by the American Society for Testing Materials during the year covered among other things five different types of fabricated steel pipe, alloy wire for electrical heating elements; concrete masonry building units, natural building stone; a test for tinting strength of pigments and for lacquer enamels; also specifications for cotton goods for pyroxylin coatings and test for relative humidity. Specifications for aluminum-base and zinc-base die castings were prepared as results of data obtained from a comprehensive series of tests on die castings (see *THE AMERICAN YEAR BOOK*, 1930, p. 628). Important contributions to the concrete and road materials fields were five specifications covering various procedures for curing concrete, and methods or tests for soundness of fine and coarse aggregates as a measure of weather resistance. The Society also made revisions in 14 of its standards and 25 tentative standards in order to keep them abreast of current practice and advanced 18 of its tentative standards to the status of standard. The Society now publishes 623 speci-

fications and tests which is indicative of the magnitude of this one standardization field. In the construction field, the American Concrete Institute issued specifications for ready-mixed concrete, construction specifications for concrete work on ordinary buildings and on the small job, and for the supply, fabricating and setting of reinforcing steel. A noteworthy development is the greater interest that purchasing agents throughout the country are taking in the application of materials and commodities specifications in their everyday purchases.

Building codes throughout the country are being used and brought up to date, a work that has been stimulated by the Building Code Committee of the Department of Commerce and the organization of building officials conferences in various parts of the country. Building codes have not kept pace with progress in design, construction and materials, largely because of the difficulty of revision of legal and quasi-legal documents, and the present efforts at revision are to be highly commended. The availability of standard specifications for the common construction materials has been of much assistance in developing the materials sections of new and revised codes and in simplifying reference to quality requirements. An outstanding example is the Uniform Building Code prepared by the Pacific Coast Building Officials' Conference.

Economic significance of specifications for materials received special emphasis during the year in a discussion that developed the various advantages of specifications to the producer, the user, and the purchasing organization (*Western Soc. Engrs., Journal*, vol. XXXVI, October 1931, p. 280). Examples were drawn from such widely different fields as steel, concrete, and telephone and telegraph supplies. The consensus of opinion was that the work of standardization in the materials field should be continued vigorously to accomplish the final aim which is greater economy to the ultimate consumer.

COMMERCIAL AVIATION

By ANDREW F. HAIDUCK

BELLANCA AIRCRAFT CORPORATION

GENERAL

American Supremacy.—According to an annual report to President Hoover by Clarence M. Young, Assistant Secretary of Commerce, the United States leads the world in commercial aeronautics. The transport passenger and mail system now in operation is superior to all the rest of the world combined. Increasing confidence of the public in our airlines, demonstrated by the continued patronage, has made the airplane already a forceful factor in our transportation system. Air mail and express poundage showed a healthy increase while passenger transport showed a slight decrease over 1930. The total number of miles flown in scheduled transport operation increased 20 per cent over a similar period in 1930.

Management.—Consolidation and combination of the operators in air transport has resulted in more efficient management with a general reduction in passenger fares. The leading ten operators now control 83.4 per cent of all scheduled flying.

Safety.—The relative safety of air transport has steadily increased due to rigid maintenance and inspection measures. This has been reflected in the number of miles flown per passenger fatality. The number of miles flown the first six months of this year per passenger fatality has doubled that for the same period in 1930.

Airports and Airway Mileage.—Airports and the miles of airways have shown a definite increase and an over-all healthy growth. On Oct. 15, 1931, there were 2019 landing fields listed and 51,483 miles of airways with all the necessary aids for navigation and safety.

Aircraft production the first nine months of this year was only 86 per cent of that produced in the first nine months of 1930. However, it is estimated that the total production for the year will not be very much below that for 1930.

SCHEDULED AIR TRANSPORT

Air Mail and Passenger Transport.—American operated scheduled air transport lines carried 193,651 passengers, 5,589,707 pounds of mail and 1,299,863 pounds of express during the first six months of 1931. The amount of mail carried represented an increase of more than 500,000 pounds over the first six months of 1930, when the total transported was 3,950,796. There also was an increase in express shipments over the first half of 1930, when 1,245,477 pounds were dispatched by air. Passenger traffic, however, showed a slight decrease. The number of air passengers on the scheduled air lines in the first six months of 1930 was 208,357. Direct comparisons are made between corresponding six-month periods of calendar years, as conditions usually are more favorable during the last half of the year.

Mileage Flown.—The total number of miles flown increased from 16,902,728 in the first six months of 1930 to 20,304,430 in the first six months of 1931. However, the total number of passenger miles flown, (a passenger mile being the equivalent of one passenger flown one mile), showed a decrease from 52,264,616 in the first half of 1930 to 47,501,901 in the first half of 1931.

Air Line Operations.—In the tabulation below statistics are given for each of the domestic air lines; for each American operated air line extending into Canada, Alaska, or Central and South America; and totals for domestic operations, total operations and grand totals for all operations are shown.

	Jan.-June 1931	Jan.-June 1930
DOMESTIC		
Miles flown.....	18,129,168	14,595,915
Passengers flown.....	169,816	185,956
Express—pounds.....	1,129,976	1,242,458
Mail—pounds.....	4,332,714	3,761,376
Mail payments..	\$9,160,260.88	\$6,954,808.45
Passenger miles..	40,855,654	40,319,602

COMMERCIAL AVIATION

FOREIGN—(Canada, Latin America, etc.)

Miles flown.....	2,175,262	2,306,813
Passengers flown..	23,835	22,401
Express—pounds..	169,887	3,019
Mail—pounds...	256,993	189,420
Mail payments...	\$3,464,772	\$2,217,367.17
Passenger miles...	6,646,247	11,290,147

DOMESTIC AND FOREIGN

Miles flown.....	20,304,430	16,902,728
Passengers flown..	193,651	208,357
Express—pounds..	1,299,863	1,245,477
Mail—pounds...	4,589,707	3,950,796
Mail payments...	\$12,625,032.88	\$9,172,175.62
Passenger miles..	47,501,901	52,264,616

Operators.—The bulk of passenger air traffic in the United States now goes to combined mail and passenger operations, more than 50 per cent being handled by the three most important of these. Especially illustrative of the trend toward consolidation are the facts that approximately 50 per cent of the total mileage flown daily is accounted for by the operations of three companies, 63.3 per cent of the total is accounted for by the leading five operators; while the leading ten covered 83.4 per cent. As a result of the recent consolidations mail transportation is handled entirely by nine operators. The direct result of these combinations has been the lowering of passenger fares as well as the cost of mail transportation. Passenger fares in most cases are not much more than the train plus Pullman fare and the cost to the government of domestic air mail under the Watres Bill has been reduced from the high figure of \$1.09 per airplane mile for the fiscal year 1929 to 75 cents average for the first six months of 1931. For August, 1931 the rate for the domestic line was down to an average of 67 cents an airplane mile.

MISCELLANEOUS FLYING OPERATIONS

Miscellaneous flying, including such operations as experimental, exhibition, industrial student instruction, and pleasure flying showed a decrease in both mileage and passengers carried for the first six months of 1931 over the same period in 1930. The total number of miles flown for the first half of 1931 was 43,282,595 against 51,767,200 in the first six months of 1930. The total number of passengers carried for hire and pleasure was 811-

590 against 924,800 for the same periods in 1931 and 1930 respectively.

AIRCRAFT ACCIDENT RECORD

As compared with the corresponding six-month period of 1930 the passenger miles flown per passenger fatality on scheduled air transport operations showed an increase of more than 100 per cent. In the first six months of 1930 the miles flown per passenger fatality were 2,375,664; in the first six months of 1931 the passenger miles flown per passenger fatality were 5,277,989. Miles flown increased from 16,902,728 in the first half of 1930 to 20,304,430 in the first half of 1931; while passenger fatalities decreased from 22 to 9 for the same periods respectively.

AIRPORTS AND AIRWAYS

Airports.—There has been a steady increase in the number of airports in 1931. On Oct. 15, there were listed 2019 airports and fields against 1792 at the same time in 1930, (Page 640—THE AMERICAN YEAR BOOK 1930). A detailed sub-division of the 1931 total follows:

Municipal airports.....	641
Commercial airports.....	655
Department of Commerce intermediate fields.....	360
Army airdromes.....	51
Naval air stations.....	12
State operated fields.....	3
Marked auxiliary fields.....	296
Miscellaneous government fields.....	3
Proposed airports.....	498
Airports and landing fields having night lighting equipment.....	671
Total.....	2019

Airways.—On Dec. 1, 1931, there were 43,529 miles of mail airways in operation. The total miles of airways in operation at this time was 51,483. There were scheduled daily 160,880 miles of which 108,011 was devoted to United States contract mail and 52,869 miles to non-mail services. This mileage makes the United States superior in commercial air transport to any other country.

AIDS TO AIR NAVIGATION

Beacons and Weather Stations.

—In addition to the revolving beacons already existing for night flying there are now 51 radio range beacons

in operation with 13 more being built. There are also 48 airways radio communication stations for broadcast of weather information with 10 more in the process of construction.

Telegraph Circuits.—There are now in operation 9500 miles of automatic telegraph typewriter circuits for collection and transmission of weather reports. This represents an increase of 3850 miles over that of 1930. These stations collect weather information along the airways and transmit it to the radio-telephone stations from which it is broadcast to airmen in flight. The stations also serve to report the progress of scheduled aircraft flying along the airways. When a plane departs from an airport a message to that effect is typed upon the telegraph machine at that point and appears on all of the other machines along the airway. When the plane passes each station a report of its progress, including the time it was sighted, is sent out over the circuit so that the position of the craft is known at all times up to its arrival at its destination.

Lighting.—Three additional lighted transcontinental airways are also projected: From New York to San Francisco; Mid-continent route between New York and Los Angeles, and Southern transcontinental route between New York and Los Angeles.

Maps.—Sectional airway maps published by the Department of Commerce constitute another distinct aid to air navigation. Radio range beacon courses are indicated as well as other beacons, landmarks, and hazards. Very shortly no territory anywhere in the country need be flown by a pilot without a map designed especially for air navigation.

Radio Aids to Air Transport.—Two-way radio receiving apparatus has been brought to a high degree of efficiency and has stood the test of extensive use for more than a year on airplanes in flight. Automatic volume control has been developed relieving the pilot of much of the attention which he was hitherto required to give to the receiving apparatus. Direction finders have been developed for use aboard aircraft

with devices giving visual indication of direction. Experimentation has been advanced on radio echo and some types of altimeters which give promise of enabling a pilot at any time to observe accurately his distance from the ground. A system of radio aids for blind landing has been worked out, by which landings can be made at a suitably equipped landing field when the ground is wholly invisible. A system of simultaneous radio-telephony and visual radio beacon service has been worked out. In this system a single transmitter will give these two services on a single frequency, so that the pilot does not have to interrupt the reception of voice messages to observe his radio course indicator or vice versa.

AIRCRAFT MANUFACTURERS, PERSONNEL, AND PLANES

Manufacture.—The revised edition of the *Aeronautics Trade Directory* lists 2818 firms manufacturing planes, engines, and related accessories. This total is 200 over the previous list of July 1, 1930. Each of the firms listed is engaged in the manufacture of aircraft or accessories, the operation of aircraft, or in some business linked with the aeronautic industry. The number of concerns listed as manufacturers of airplanes is 240 as compared with 117 in the previous edition. Aircraft engine manufacturers number 85 as against 68 in 1930. There was an increase in the number of glider manufacturers from 32 to 35, and in the number of lighter-than-air craft manufacturers from 8 to 10.

Personnel.—On Dec. 1, 1931, there were 17,500 active pilots in the United States and 9087 licensed mechanics. 14,650 persons were employed by the aircraft and engine manufacturers, and 7000 were employed in scheduled air transportation.

Planes.—At the end of November there were 7512 licensed aircraft, 3094 unlicensed aircraft, 102 licensed gliders, and 1174 unlicensed gliders in the United States. It is estimated that 753 of the licensed airplanes are used in scheduled air transportation, a little more than 10 per cent of the total licensed airplanes.

COMMERCIAL AVIATION

AIRCRAFT PRODUCTION

Manufacture and Types.—Airplanes manufactured in the United States during the first nine months of 1931 totaled 2321 according to a survey made by the Aeronautics Branch of the Department of Commerce, including 1583 manufactured for domestic civil use, 637 military deliveries and 101 exported to foreign countries. The airplanes built for civil use in this country included 1,130 monoplanes, 399 biplanes, 52 autogiros, and 2 helicopters. The majority of the monoplanes were landplanes of the one- or two-place open cockpit type, and of the biplanes the majority were either two- or three-place open cockpit landplanes. During the first nine months of 1930 a total of 2710 airplanes were manufactured of which 945 were monoplanes and 987 biplanes. Of the total 1930 were manufactured for domestic civil use, 556 delivered to the Army and Navy, and 198 were exported. The total airplane production of 2321 airplanes for the first nine months in 1931 is only 85.8 per cent of the number produced during the same period in 1930. Of the 1583 airplanes manufactured during the 1931 nine-month period for domestic commercial use, 380 were manufactured during the first quarter, 752 during the second quarter, and 451 during the third quarter. The total production was distributed among 297 companies or individuals. Two companies produced 100 or more planes, three companies between 50 and 99, nine companies between 25 and 49, eleven companies between 10 and 24, 36 companies between 2 and 9, and 236 companies or individuals produced only 1 airplane each, largely of the one or two-place open monoplane type with less than 100 horsepower.

Engines.—The engines used in 1,124 planes constructed under Approved Type Certificates were less than 100 horsepower for 608 craft, 246 planes used engines with 101 to 200 horsepower, 213 planes with 201 to 300 horsepower, 34 with 301 to 500 horsepower, and 23 with horsepower over 500. Fifty-six craft produced

under Approved Type Certificates were multi-engined.

Exports.—The number of airplanes exported for the 1931 nine-month period was only 51% of that for the same period in 1930. The steadiest customers of American aeronautical manufacturers are Canada and the United Kingdom. It is estimated that the total number of airplanes produced in 1931 will be 2520. This is 93 per cent of the total output in 1930.

AIRPLANE PRODUCTION

(Jan. 1-Sept. 30, 1931)

Monoplanes

Open cockpit (landplane)	
One place.....	266
Two place.....	543
Three place.....	11 ¹
Four place.....	2

Total open..... 822

Cabin (landplane)

Two place.....	32 ²
Three place.....	10 ³
Four place.....	128 ⁴
Five place.....	4
Six place.....	13
Seven to ten place.....	40
Over ten place.....	47 ¹

Total cabin..... 274

Convertibles.....	6
Amphibians.....	16 ⁵
Monoplane for which data as to place not available.....	1 ³
Seaplanes.....	6

Total monoplanes..... 1,125

Biplanes

Open cockpit (landplanes)	
One place.....	36
Two place.....	141
Three place.....	159
Four and five place.....	28

Total open..... 364

Cabin (landplane)

Four to seven place.....	26
Amphibians.....	6
Seaplanes.....	3

Total biplanes..... 399

Autogiros.....	52
Helicopters.....	2
Military airplane deliveries.....	637
Airplanes exported.....	101 ⁶

Grand total..... 2,316

¹ Two multi-engine planes

² One multi-engine plane

³ Fifteen multi-engine planes

⁴ Thirty-nine multi-engine planes

⁵ Six multi-engine planes

⁶ Does not include planes listed in the above breakdown, nor planes exported in 1931 which were manufactured prior to January 1, 1931.

PROGRESS AND DESIGN TRENDS

Aircraft Performance.—Careful attention to details and streamlining in conjunction with the use of more powerful engines has resulted in increased speeds for aircraft manufactured in 1931. All excrescences in the air stream have been either removed or carefully faired. Landing gears in many cases have also been fitted with "spats" or made retractable. Fuselages have been made of streamline form and monocoque construction. The result has been an increase in speed which makes it possible to bring Washington and New York within commuting distance of each other. The time required to cover this distance of 210 miles is 68 minutes in a special express service inaugurated by one of the leading passenger transport operators in the east. In many designs the ultimate efficient flying wing is being closely approached with resultant speeds as high as 200 miles per hour. The Schneider Trophy was won by Great Britain at an average speed of 340.08 miles per hour. A project under way in Germany contemplates the use of an airplane at an altitude of seven miles. The cabin will be hermetically sealed and a multiple stage super-charger on the engine will furnish enough power at this altitude to propel the craft through the rarefied air at one thousand miles per hour. This is no longer in the realm of fantasy since the airplane is already built and in the process of being tested.

Loading.—The use of more powerful engines to achieve greater speed has resulted in a decrease in power loading and at the same time wing loading in general has become greater. In the case of the six- to nine-place airplanes this has resulted in a smaller payload in per cent of the gross weight and also in proportion to the horsepower. The large airplanes have demonstrated their efficiency from the viewpoint of payload despite increased speeds. The average landing speed of airplanes was increased but apparently not at the cost of safety. This has been largely due to the many fine airports with surfaced runways now scattered through-

out the country which make the higher landing speeds relatively as safe as the slower landing speeds of two years ago.

Engines.—The increased power of aircraft engines has been obtained in many cases by more efficient cylinder head design, superchargers, and the use of anti-knock or doped fuels. The most outstanding development in this field was the introduction of supercharged engines in 1931. These engines are particularly suitable on airways where a high altitude must be maintained. The radial air-cooled type still predominates although there is a marked trend towards in-line types.

AIRCRAFT STRUCTURE

Metal Construction.—The trend toward metal construction has been more marked than ever. Metal tubing has been used freely for fuselage construction and heat treatment to secure greater strength weight properties has led to the use of tubing as wing beams. One of the outstanding developments was the perfection of the spot-welding technique necessary for the efficient use of stainless steel. One amphibian has been built entirely of stainless steel. A type of construction which has appeared in several new designs is the metal monocoque fuselage built of metal framework with sheet metal covering and depending upon this covering for a part of the strength.

PASSENGER COMFORT

The effort to achieve comfort and convenience in airplane cabins has been most marked in designs for airplane transport operation and pleasure flying. Many ideas along this line have been borrowed from automobile and railroad car designers. Large transport planes now have in their cabins comfortable reclining chairs, reading lights, lavatories, racks for coats and packages, adequate heating and ventilating facilities and sometimes kitchenettes. The interior fittings have been tastefully designed by competent interior decorators so that they will be attractive as well as

AMERICAN MACHINERY

comfortable. Private owners frequently have their cabins decorated to suit individual tastes. There has been a continued effort to augment the comfort and luxury of cabin interiors.

AIRSHIPS

The acceptance by the Navy of the *U. S. S. Akron* has brought much closer the utilization of the airship for commercial operations. The inherent ability of the dirigible to carry a large payload over a long distance make this craft particularly applicable to transoceanic service. As a result of a survey by the International Zeppelin Company it was found that a 58-hour schedule across the Atlantic can

be maintained with terminals in Baltimore, Washington, Philadelphia, and Richmond, Va. There is a bill now before Congress which would authorize the Postmaster-General to award mail contracts to transoceanic airship lines.

MISCELLANEOUS

Other significant developments in 1931 were the introduction of the autogiro to the public, of which 52 were manufactured, the installation of an automatic robot pilot on a transport, said pilot keeping the craft in a level position and on a true course, and the numerous successful oceanic flights illustrating the increased reliability of both airplane and engine.

AMERICAN MACHINERY

By W. H. RASTALL

CHIEF, INDUSTRIAL MACHINERY DIVISION, DEPARTMENT OF COMMERCE

ECONOMIC FACTORS

Effect of Depression.—Persons in the machinery industry frequently remark that their industry is the first to feel a depression and the last to recover therefrom. Unquestionably, under the ups and downs of the business cycle, the machinery industry is subjected to booms with higher peaks, depressions with lower depths, than almost any other commodity, and as stated, the turn down is apt to come earlier than for industry generally, the recovery to come later. Because of this 1931 has been a most unsatisfactory year for the American machinery manufacturer. In fact, painful for the machinery manufacturers of the world, for this has been a world-wide depression, and conditions abroad at least resemble those at home. The German Machinery Manufacturers Association (*Verein Deutscher Maschinenbau Anstalten*) for example, reporting in October, stated that the industry there was operating at 39.17 per cent of total capacity as compared with 53 per cent in 1930, 69 per cent in 1929, and 73 per cent in 1928. Unfortunately,

corresponding data covering the American industry is not available, but probably conditions in this country were at least as unfavorable as in Germany.

Outlook and Equipment Policy.

—Perhaps some relief is in sight for the American machinery manufacturers for during this depression economists, public speakers, and others have come to realize that there is an important relationship between the fluctuations in demand in the equipment industries, and the corresponding fluctuations of the general business cycle. Heretofore during boom periods machinery purchases have been so extravagant that they can only be described as a form of anarchy, and at the other extreme when depression comes the paralysis of machinery buying is so extreme as to force the machinery manufacturer to all but suspend operations. Obviously, a better equipment policy is required for American industry, and the fluctuations of the general business cycle can never be cured until these extravagances of buying and failure to buy are eliminated. And

if, as a result of the present depression, a method is developed to eliminate these wild oscillations of the equipment business cycle, the machinery industry and industry generally will undoubtedly benefit enormously.

Curtailement of Buying.—Through most of 1931, machine buying has been reduced to a minimum. There has been some demand for power plant equipment, for construction machinery, and a few other exceptional lines, but with the steel industry down as low as 30 per cent of capacity, with the sugar industry in distress and prices, say, one cent a pound, with cotton at five cents a pound, and copper not much higher, there has been really very little demand for industrial equipment. A few important orders have been placed, but these were quite exceptional.

Potential Demand.—Through all these months of depression and during the previous boom evidence has accumulated showing that the world is hungry for machinery, and as rapidly as circumstances allow enterprises will be established on every continent demanding a huge tonnage of mechanical equipment, absorbing not merely industrial machinery but construction equipment, mining equipment, in fact, every form of machinery. And, as the United States produces well over half of the world's machinery and is recognized as a leading source of quality equipment, machinery buyers in foreign countries are ever more and more interested in meeting their requirements from this source of supply.

TECHNICAL PROGRESS

Generally speaking, a machinery manufacturer during months of depression finds opportunity to improve his designs, and as soon as demand is stimulated there is reason to believe that new designs will be thrown on the market reflecting very substantial improvement over the equipment available heretofore. This should again place the American manufacturers of machinery far ahead

of foreign competition, and should strengthen the competitive position of the American industry generally; reducing costs, improving quality; substituting new materials, progress in every direction. This, of course, has taken effect on existing equipment, and manufacturers here and abroad will find it necessary to give ever more and more attention to the important subject of obsolescence.

PRICE SITUATION

It is most encouraging to observe that there has been practically no change in the prices asked for machinery since 1923. During other business crises competition has frequently degenerated to a point where the price structure was undermined and the business demoralized, but the fact that so commonly machinery prices have been maintained during recent months indicates very clearly that machinery manufacturers have a much better understanding of the economic force involved during a world depression, that it is impossible by cutting prices to secure a competitor's share of such business as is going, and in many other ways the business is conducted on a much higher level than previously,—facts that should reflect themselves in the profit experience of the industry as never before.

MACHINERY EXPORT TRADE

Comparative Figures.—The export of strictly industrial machinery for 1931 will approximate \$155,000,000 which under present conditions is a very substantial business. It is true these exports were as high as \$257,000,000 in 1929, but were as low as \$112,000,000 in 1922. All things considered machinery exports in 1931 made a splendid showing. The 1930 figure was \$220,000,000.

British Competition.—The British shift from gold to sterling apparently has had the effect of reducing the prices of British machinery about 20 per cent, introducing a new and difficult form of competition, particularly for those types of machinery which are also made in Great Britain. Yet

on the other hand, it is interesting to reflect that even a 20 per cent reduction in British prices has had relatively little effect on American exports of industrial machinery. Instead, it has had the effect of placing the British into closer competition with Germany, and other continental machinery. There is more similarity between the machinery made in Great Britain and that made in Germany than there is between the British and the American products, and although not many weeks have passed since this change in British policy was announced, the indications are that American machinery exports will, relatively speaking, be little affected, while the competition between Great Britain and the continental producers will be greatly intensified.

Machinery Outlook Abroad.—If, as anticipated, the worst of the depression is over, and we now find ourselves on the way up not only in this country but all over the world, and in spite of occasional disturbing

elements from Europe and Asia, it would seem that the American machinery industry can look forward to steadily improving demand from both the domestic and foreign markets. At home, efforts are being made to develop a definite policy that will result in the replacement of equipment that has become obsolete, and abroad, in addition to some attacks upon the obsolescent there is also a very substantial business expected in equipping new industries that are to be established in scores of countries. China, for example, has developed a ten-year plan which, if successfully prosecuted, will involve the purchase of billions of dollars worth of factory equipment, and the power plant machinery needed for driving same. But whether expansion is carried along on the basis of such a plan, or following the methods of earlier years, we can undoubtedly look forward to very substantial industrial development at home and abroad for years to come.

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

(For further information, the reader may address the following organizations)

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| ALLIED BUILDING METALS INDUSTRIES,
10 W. 33rd St., New York City. | AMERICAN ROAD BUILDERS ASSN.,
Press Bldg., Washington, D. C. |
| AMERICAN CERAMIC SOCIETY, 2525 N.
High St., Columbus, Ohio. | AMERICAN SOCIETY FOR TESTING MA-
TERIALS, 1315 Spruce St., Phila-
delphia, Pa. |
| AMERICAN CONCRETE INSTITUTE, 2970
W. Grand Blvd., Detroit, Mich. | AMERICAN SOCIETY OF CIVIL ENGI-
NEERS, 33 W. 39th St., New York
City. |
| AMERICAN CONSTRUCTION COUNCIL,
28 W. 44th St., New York City. | AMERICAN SOCIETY OF HEATING AND
VENTILATING ENGINEERS, 25 W.
39th St., New York City. |
| AMERICAN FOUNDRYMEN'S ASSN., 222
W. Adams St., Chicago, Ill. | AMERICAN SOCIETY OF MECHANICAL
ENGINEERS, 29 W. 39th St., New
York City. |
| AMERICAN INSTITUTE OF CHEMICAL
ENGINEERS, 85 Livingston St.,
Brooklyn, N. Y. | AMERICAN SOCIETY OF MUNICIPAL
ENGINEERS, Navy Department,
Washington, D. C. |
| AMERICAN INSTITUTE OF ELECTRICAL
ENGINEERS, 33 W. 39th St., New
York City. | AMERICAN SOCIETY OF NAVAL EN-
GINEERS, Navy Department, Wash-
ington, D. C. |
| AMERICAN INSTITUTE OF MINING
AND METALLURGICAL ENGINEERS, 29
W. 39th St., New York City. | AMERICAN SOCIETY OF REFRIGERATING
ENGINEERS, 37 W. 39th St., New
York City. |
| AMERICAN IRON AND STEEL INSTITUTE,
75 West St., New York City. | |
| AMERICAN RAILWAY ENGINEERING
ASSN., 431 S. Dearborn St., Chicago,
Ill. | |

XIX. ENGINEERING AND CONSTRUCTION

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| <p>AMERICAN SOCIETY OF SAFETY ENGINEERS, 25 W. 39th St., New York City.</p> <p>AMERICAN STANDARD ASSN., 29 W. 39th St., New York City.</p> <p>AMERICAN STATISTICAL ASSN., 114 Woodward Bldg., Washington, D. C.</p> <p>AMERICAN WELDING SOCIETY, 29 W. 39th St., New York City.</p> <p>BUILDING TRADES EMPLOYERS' ASSN., 2 Park Ave., New York City.</p> <p>COMMITTEE ON EXPERIMENTAL POWER, 2 Rector St., New York City.</p> <p>ENGINEERING FOUNDATION, 29 W. 39th St., New York City.</p> <p>ILLUMINATING ENGINEERING SOCIETY, 29 W. 29th St., New York City.</p> <p>INSTITUTE OF RADIO ENGINEERS, 37 W. 39th St., New York City.</p> | <p>NATIONAL AERONAUTIC ASSN., 1623 H St., N. W., Washington, D. C.</p> <p>NATIONAL BOARD OF FIRE UNDERWRITERS, 85 John St., New York City.</p> <p>NATIONAL ELECTRIC LIGHT ASSN., 420 Lexington Ave., New York City.</p> <p>NATIONAL FIRE PROTECTION ASSN., Boston, Mass.</p> <p>NEW YORK ELECTRICAL SOCIETY, 29 W. 39th St., New York City.</p> <p>SOCIETY FOR PROMOTION OF ENGINEERING EDUCATION, 29 W. 39th St., New York City.</p> <p>SOCIETY OF AUTOMOTIVE ENGINEERS, INC., 29 W. 39th St., New York City.</p> <p>SOCIETY OF NAVAL ARCHITECTS AND MARINE ENGINEERS, 29 W. 39th St., New York City.</p> |
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DIVISION XX

GEOPHYSICAL SCIENCES

DYNAMIC AND STRUCTURAL GEOLOGY

BY KIRTLLEY F. MATHER

PROFESSOR, HARVARD UNIVERSITY

GENERAL

Geologic field work during the last year has been greatly curtailed, because of the general economic depression. Many of the oil and mining companies have reduced their staffs and many of the state surveys have had diminished appropriations. The U. S. Geological Survey, however, has pursued its field work with unusual vigor. As always, a large number of geologists have been prosecuting independent projects. The International Geological Congress will meet in the United States June, 1933, the first time in this country for over thirty years. Many American geologists are therefore engaged gathering data for a new geologic map of North America, which the U. S. Geological Survey is preparing for the Congress.

STRUCTURAL GEOLOGY

Appalachian Structure, Taconic Disturbance.—James D. Dana stated in 1874 that the Green Mountains of Vermont had been folded at the close of what is now known as the Ordovician period. Twenty years later he proposed to call this period of compression the Taconic Revolution. T. H. Clark, in 1921, demonstrated that most of the evidence cited as proof of this revolution was unsound, and concluded that Taconic folding was limited to a small area in eastern New York State. New evidence gathered during the last ten years shows that the Taconic folding was much more extensive than Clark had supposed and that it affected the Appa-

lachian region from the Susquehanna River to Gaspé Peninsula, a distance of a thousand miles. George W. Stose, in a paper entitled "Unconformity at the base of the Silurian in Southeastern Pennsylvania" (*Bull. Geol. Soc. America*, vol. 41, pp. 629-658, 1930) gives detailed maps and faunal lists which demonstrate a Late Ordovician episode of folding in Pennsylvania. Charles Schuchert's "Orogenic times of the Northern Appalachians" (*Bull. Geol. Soc. America*, vol. 41, pp. 701-724, 1930) shows that in New Brunswick and Quebec strong compressive movements closed the Ordovician period.

Ouachita Mountains and Related Structures.—During recent years no mountain structure has received more careful attention than that of the Ouachita Mountains of Oklahoma and Arkansas, largely because of the intense interest displayed by petroleum geologists working in adjacent oil fields. W. A. J. M. van Waterschoot van der Gracht, in a brilliant synthesis entitled "Permo-Carboniferous Orogeny in South-Central United States" (*Bull. Assoc. Pet. Geol.*, vol. 15, pp. 991-1058, 1931) has woven all known details into a unified and coherent picture. Dake first suggested that the Ouachita shale-sandstone facies had been thrust scores of miles toward the north, over the Arbuckle limestone facies. Van der Gracht greatly elaborates this concept, and extends it to include the mountains of Texas as well as those of Arkansas and Oklahoma. The great similarity

to the orogenic and sedimentary history of the Alps is also discussed.

"The Geology of the Glass Mountains, Texas, Part I, Descriptive Geology," by Philip B. King (*Univ. of Texas Bulletin*, No. 3038, Oct. 8, 1930) is an important contribution to the structural geology of a closely related area. The Glass Mountains consist of northwesterly dipping Permian rocks overlain unconformably by Cretaceous outliers. The most important fault in the adjacent Marathon Basin is the Dugout Creek overthrust, along which lower Paleozoic rocks have been thrust northwestward not less than five miles. Many smaller thrusts, dipping toward the southeast, have produced a typical imbricate structure of Southern Appalachian type.

Basin and Range Province.—The structure of the "Basin Ranges" has long been a fertile field for argument among geologists. "Geology and Ore Deposits of the Goodsprings Quadrangle, Nevada" by D. F. Hewett (*Prof. Paper 162*, U. S. Geological Survey, 1931) is an outstanding contribution to the solution of the problems involved. The thrusting is from the west, and the faults are successively younger in this direction. The complex history as unravelled by Hewett is as follows: (1) deposition from Cambrian to Jurassic; (2) folding and thrusting; (3) intrusion of granite porphyry; (4) early normal faults; (5) mineralization; (6) late normal faults; (7) extensive erosion; (8) Miocene (?) volcanism; (9) normal faults. The present ranges are erosional remnants and are not fault-block mountains.

Coast Range and Cascade Mountains.—Two important papers on the structure of the Pacific Border Province have lately appeared. Bruce L. Clark describes the "Tectonics of the Coast Ranges of Middle California" (*Bull. Geol. Soc. America*, vol. 41, pp. 747-828, 1930) and reaches the conclusion that many of the faults are Pre-Cretaceous. These divided the area into many blocks which were affected by complex vertical movements during later Mesozoic and Cenozoic time. Some rose to be eroded, others

sank to become areas of deposition. Each block was a law unto itself. Consequently every block has a different stratigraphic column from adjacent ones. According to Clark the folds are due to later horizontal compression squeezing the areas of sedimentation. Lateral shear along the Pre-Cretaceous faults has also been an important factor in producing folds.

C. H. Crickmay considers "The Structural Connection Between the Coast Range of British Columbia and the Cascade Range of Washington" (*Geol. Mag.*, London, vol. 67, pp. 482-49, 1930). The chief structural feature north of the international boundary is the Harrison Lake thrust, along which the Carboniferous strata of the Cascade Mountains have been pushed westward about ten miles over the Cretaceous of the Coast Range.

Igneous Structures.—New interpretations of the structure of igneous bodies are involved in such papers as "Cauldron-Subsidence of the Ossipee Mountains" by Louise Kingsley (*Am. Jour. Sci.*, vol. 22, pp. 139-168, 1931) and "Structural Geology of the Adirondack Anorthosite" by Robert Balk (*Mineralogische und Petrographische Mitteilungen*, Bd. 41, H. 3-6, 1931). The theory of cauldron-subsidence was first proposed in Great Britain for the Glen Coe region in 1909 by Clough, Maufe, and Bailey, but the cauldron-subsidence in the Ossipee Mountains of New Hampshire is the first example described from North America. The essence of the theory is that a cylindrical block, a few miles in diameter, settles into a subjacent magma chamber. As the block sinks, molten magma rises in the peripheral crack and forms a ring-dike. Surrounding the Ossipee Mountains is the frame of older (Pre-Cambrian?) granite. The ring-dike, completely enclosing the area of subsidence, is nearly circular and is nine miles in diameter. It varies in width from a few hundred feet to a mile and is composed mainly of a porphyritic syenite. Within it are the subsided Moat volcanics which, according to Miss Kingsley, have dropped down not less than 12,500 feet. The last important event in the igneous his-

EARTHQUAKES AND VOLCANOES

tory of the region was the intrusion of a central stock of coarse Conway granite.

Balk's paper describes a very different type of intrusion in the Adirondack Mountains. The Adirondack anorthosite is the first large igneous mass in North America to be studied by the "Cloos" method. Careful measurements were made on the attitude of the joints, flow lines, and crystal orientation. From these data and from the structure of the gneisses and schists to the south of the anorthosite body, Balk concludes that the Adirondack anorthosite is a great lens, intruded from the north. The original magma was a diorite. Spherical masses of gabbro formed as segregations within this body. When most of the plagioclase feldspar had crystallized to form a crystal net, the residual magma was squeezed out southward to form the syenite and granite sills.

DYNAMIC GEOLOGY

Classification and Duration of the Pleistocene.—Pleistocene history has received considerable attention during the year. Among the important studies are those of Morris M. Leighton, "The Peorian Loess and the Classification of the Glacial Drift Sheets of the Mississippi Valley", (*Jour. Geol.*, vol. 39, pp. 45-53, 1930), and George F. Kay, "The Relative Ages of the Iowan and Wisconsin Drift Sheets" (*Am. Jour. Sci.*, vol. 21, pp. 158-172, 1931) and "Classification and Duration of the Pleistocene Period," (*Bull. Geol. Soc. America*, vol. 42, pp. 425-466, 1931). Kay and Leighton agree that the Iowan drift is much more closely related in age to the Wisconsin drift than to the

Illinoian. They recognize four main glacial stages in North America, which Leighton calls the Nebraskan, Kansan, Illinoian, and Wisconsin. The last he divides into Manitoban (equals Iowan), Quebecan (early and middle Wisconsin of the older classifications), and Hudsonian (late Wisconsin). Kay proposes an entirely new terminology.

Metamorphism.—Since the publication of the classic studies in metamorphism by Van Hise, Leith, and Mead, American geologists have contributed little to this subject. In contrast, it has received much attention in Europe during the last decade. As an indication of a renewal of American interest, Eleanor B. Knopf discusses retrogressive metamorphism in a paper entitled "Retrogressive Metamorphism and Phyllonitization" (*Am. Jour. Sci.*, vol. 21, pp. 1-27, 1931). Geologists have long known that with increase in temperature and pressure there is progressive metamorphism. Only recently, however, have they realized that with decrease in temperature and pressure highly metamorphosed rocks may revert to rocks of a lower metamorphic type.

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EARTHQUAKES AND VOLCANOES

By L. DON LEET

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EARTHQUAKES

Nicaragua.—Managua, Nicaragua, was the scene of the outstanding

disaster of the year involving American interests. On March 31, a severe earthquake, followed by fire, killed

over 2000 and caused property damage of over thirty million dollars. Many of the victims were Americans. Managua is within sixty miles of a proposed route for the Nicaraguan canal. Following the catastrophe of March 31, after-shocks were reported from Managua, April 1, 7, 9, 20, and 27 after which they were apparently no longer regarded as news, for they inevitably continue, though with diminishing frequency.

Northeast Region.—The activity in this region was limited to small local shocks reported as follows: Nov. 1, 1930, at Malone, N. Y.; Jan. 7, 1931, Portland, Maine, felt tremors which originated in Canada; April 20, at 2:55 P. M. (all times given are local) in upstate New York and part of Massachusetts; May 4, at Amherst, Mass.; and a series on June 6, beginning at 7 P. M., with a couple more about two and a half hours later, at Rochester, N. Y.

Central Region.—A reported shock at 11 P. M., Nov. 19, 1930, felt in the vicinity of Ox-Bow Lake, Pontiac, Mich., was traced to a dynamite explosion. Dec. 23, a slight shock was felt in St. Louis, Mo. On May 5, 1931, Cullman, Alabama, was the center of the second quake in twelve years in that region. On June 10, a large section of northwest Ohio and part of Indiana were shaken by what is generally believed to have been the air-wave from an exploding meteor. A quake, reported to have been one of the most severe in recent years, was felt in the vicinity of New Madrid, Mo., which was the scene in 1811-12 of a series including one of the most violent quakes on this continent of which there is a record. August 9, Kansas City, Mo., reported slight tremors. On August 16, a series of tremors which apparently centered at Valentine, Texas (60 miles east of El Paso), and damaged every building in that town, shook southwest Texas. The disturbance was felt at Spofford, Texas, 400 miles east of El Paso; at Tucumcari, N. M., and Amarillo, Tex., to the north, and Mount Riley, Tex., 100 miles to the west. There has been no record known of previous shocks centering

in the same vicinity. It was followed August 18 by a shock which centered at Alpine, Tex. On September 20, tremors jarred structures over a wide area in Indiana and Ohio.

Western Mountain Region.—Minor shocks were reported in this region as follows: Dec. 3, 1930, Albuquerque, N. M.; Dec. 24, Lewiston, Idaho, jarred by an exploding meteor; Jan. 6, 1931, McCall, Idaho, (recalling a period in 1913 when tremors shook the section intermittently for fifteen days); Feb. 4, Albuquerque, N. M.; Feb. 12, Las Vegas, N. M.; Apr. 7, Socorro, N. M.; Apr. 10, Cedar City, Utah; June 5, Luning, Nev.; July 28, Cottonwood, Ariz.

Pacific Coast Region.—Except for a slight shock reported from northeast Washington on April 17, and one at Sultan, Wash., June 11, the quakes of this region were confined to California. They were all of extremely slight intensity, and entirely local in character. The principal ones through Sept. were reported as follows: 1930, November 6, Iowa Hill, 9, Aberdeen Depot, 17, Claremont and Forest Glen, 20, Bridgeville, 25, Calexico and Gulf of California; December 2, Gulf of California, 6, Haiwee, 7, Santa Barbara, Upper Mattole, and Goleta, 8, Ukiah, 11-12, Northern California, series of shocks throughout the two days, 13, Upper Mattole and Alton, 14, Upper Mattole, 15, Eureka and Whittier, 23, the same, 23, Upper Mattole, 24 and 27, Northern California, 28, Spreckels, 29, Pollock and Antler, 30, Castella and Santa Barbara, 31, June Lake, Mono County; 1931, January 2, Alton, 3, Ramona and Upper Mattole, 5, San Francisco, 6, Santa Cruz, 7, Upper Mattole and Briceland, 8, Big Bear City and Barstow, 9, El Granada, 20, Willits, 23, North Central California, 28, El Granada; February 6, Sargent, 8, Haiwee, 11, San Benito, 12, Point Arguello, 14, Imperial, 16, San Bernardino, 20, Bryson 21, Piedras Blancas, 23, King City; March 9, Northern California, 10, Whitlow, 17, Riverside, 31, Pomona; April 3, San Bruno, 25, Eureka, 27, Palms, 29, San Fernando; May 6, Victorville, 10,

Point Cabrillo, 20, Eureka, 29, In-yoken; June 3, Plumas, 5, Little Lake, 6, Salinas, 9, Santa Cruz and Boulder Creek, 10, Santa Clara Valley, 11, Santa Cruz, 23, Devore, 28, Richmond; July 15, Santa Margarita, 17, Bakersfield, 20, San Luis Obispo, 21, San Luis Obispo, 27, Huntington Beach.

Philippine Islands.—On Dec. 22, 1930, the northern end of Luzon was shaken by a quake centering about 320 miles from Manila. Feb. 12, 1931, a slight quake was reported from southeast Luzon; Mar. 19, all of Luzon north of Manila was shaken, and damage done in the Province of Ilocos Norte; Mar. 22, a quake was felt at Bayombong and Baler. On July 10, a slight shock on the Island of Masbate, Central Philippines, proved to be the forerunner of a severe quake on July 13, at 12:45 A. M. The main shock was followed by daily tremors throughout the month.

RESEARCH

During the summer, the Harvard Seismograph Station in the east, and the Carnegie Institution of Washington cooperating with California Institute of Technology in the west,

placed parties in the field with portable seismographs investigating the velocity of explosion-generated elastic waves in granite, and similar problems of seismology adaptable to field experiments.

VOLCANOES

Alaska.—January 28, word was received of renewed activity of the volcano Mount Shushalton; and of the beginning of eruptions of the heretofore inactive Mount Cleveland on the Island of Four Mountains. Reports from Dutch Harbor on Mar. 25, stated that an unnamed volcano on the east end of Umnals Island was active. On May 3, ashes from an unidentified erupting volcano were reported to be obscuring the sky at Kanakanak, Mount Aniakschak being considered a possible source.

Hawaiian Islands.—From November 19 to December 8, 1930, activity was renewed in Kilauea's Halemau-mau pit. The Hawaiian Volcano Observatory has studied the Hawaiian volcanoes since 1911 and recently published a summary of twenty years of Hawaiian eruptions: "The Volcano Letter," Nos. 319 & 320, Feb. 5 & 12, 1931.

MINERALOGY AND PETROGRAPHY

By HERBERT P. WHITLOCK

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NEW MINERAL SPECIES

Seamanite.—The year 1931 has been notable for the number of new mineral species which have been announced during this period. *Seamanite*, a new manganese phospho-borate, was found in the Chicago mine in Iron County, Michigan. This species, which is closely related to red-dingite, occurs in pale yellow, orthorhombic crystals, acicular in habit. It is named in honor of W. A. Seaman.

Landedite.—A new ferro-manganese hydrated phosphate, from the peg-natite rocks of Poland, Maine, has

been named *landedite* in honor of Professor Kenneth K. Landes. It is a brown alteration product of red-dingite, sometimes pseudomorphous after the latter.

Krausite.—From the borax deposits of San Bernardino County, California, comes a new sulphate of iron and potash to which the name *krausite* has been given in honor of Professor Edward H. Kraus of the University of Michigan. *Krausite* occurs in pale greenish yellow monoclinic crystals.

Schairerite.—Searles Lake in the same region has produced *schairerite*,

a new sodium sulphate with fluorine, named in honor of Dr. J. F. Schairer of the Carnegie Geophysical Laboratory. The colorless crystals of *schairerite* are steeply rhombohedral in habit.

Curtisite.—A third new California species is *curtisite*, an organic mineral from Shaggs Springs, Sonora County, occurring in greenish-yellow flakes in crevices in sandstone as a result of the emanations of hot springs. *Curtisite* was named in honor of L. Curtis who first noticed the mineral.

Fervanite.—The carnotite region of Colorado and Utah have yielded a new hydrated iron vanadate which has been given the name *fervanite* from its metallic composition (*fer-rum-vanadium*). This mineral occurs in brownish to yellowish fibrous masses. It is probably monoclinic.

Clarkeite.—The portion of Mitchell County, North Carolina, in the vicinity of Spruce Pine, which has long been famous as a locality for unusual minerals, has produced a new uranium alteration product which has been named *clarkeite* in honor of the late Prof. Frank Wigglesworth Clarke (1847-1931). *Clarkeite* is a uranate related to gummite but distinct from it. It occurs as dark brown masses in direct contact with uraninite and itself surrounded by gummite.

Ramdohrite.—From the Department of Potosi, Bolivia, comes a new sulphantimonite of lead and silver, near frizelyite in composition, which has been named *ramdohrite*, in honor of a German mineralogist, Prof. Ramdohr. It occurs in prismatic crystals, dark gray in color.

Allodelphite.—Almost every recent year a new mineral species has been announced from Langban, Sweden. *Allodelphite*, a new silico-arsenide of manganese and minor metallic bases from this locality, occurs in elongated tabular crystals (probably orthorhombic) dark reddish brown in color. It is closely related to synadelphite, the differentiation from this latter species being expressed in its name.

Bianchite.—A non-hydrous sulphate of iron and zinc has been found to occur as a white crystalline crust on the walls of the mines at Raibl,

Venezia (formerly part of Carniola). This species has been named *bianchite* in honor of Prof. Angelo Bianchi.

Nagatelite.—A new Japanese mineral from Nagatejima on the Noto Peninsula has been named *nagatelite* from its locality. It is a phosphosilicate of alumina, the rare earths lime and iron, occurring in black crystals and tabular masses.

Serendite.—A new hydrous silicate of manganese, lime, soda and potash comes from the island of Rouma, in the Los Archepeigo, French Guinea. It occurs in rose red, monoclinic crystals in nepheline syenite, and has been named *serendite*, in honor of Mr. Serend.

Stainierite.—A new cobalt hydroxide has been found at Mindingi, Katanga, Belgian Congo, a locality that has been highly productive of new species in recent years. *Stainierite*, which was named in honor of M. Xavier Stainier of the University of Gand, occurs in black compact mammillary masses. It is regarded as the crystalline phase of cobalt hydroxide, of which heterogenite is the colloidal equivalent.

Cooperite.—The provisional new species, *cooperite*, reported in THE AMERICAN YEAR BOOK for 1929 has been confirmed.

Maitlandite and Nicolayite.—Two amorphous uranium minerals from Wodgina, Northwest Division, Western Australia, previously reported as mackintoshite and thorgummite, have been established as new species as a result of more thorough investigation. They have been named *maitlandite* and *nicolayite* respectively. Both are hydrous silicates of uranium, thorium, lead and calcium. *Maitlandite* named in honor of A. Gigg Maitland, a former Government Geologist of Western Australia, is black in color. *Nicolayite*, named in honor of the late Rev. C. G. Nicolay, an eminent local collector of minerals, is yellow.

Sturtite.—Another new Australian mineral comes from the famous mines at Broken Hill, New South Wales, and is named *sturtite*, in honor of Captain Charles Sturt, who was the first white man to visit Broken Hill.

TERRESTRIAL MAGNETISM

Sturtite is a hydrous silicate of iron, manganese, lime and magnesia, occurring in jet black, amorphous compact masses.

Crystal Classification.—That the *American Mineralogist*, the official journal of the Mineralogical Society of America, has now reached the excellence that admits of its favorable comparison with other like journals throughout the world, is evidenced not only by the contribution to its pages throughout the year of several original articles on new species, but by the publication of the American version of such an important paper as Victor Goldschmidt's discussion of crystallographic classification. To those who are firm believers in the modern trend toward simplification in matters scientific, the fact that so great an authority as Dr. Goldschmidt has advanced arguments for the abandonment of the thirty-two classes in crystal classification in favor of the six system division comes as a very welcome bright spot in the year's progress.

Gems and Gem Minerals.—The second edition of *Gems and Gem*

Minerals by Edward H. Kraus and Edward F. Holden, (McGraw Hill Book Co.) published during the year, has been expanded to the extent of 36 pages over the original edition of 1925. In this revision several chapters show new matter, both in text and illustration, notably those on Physical Properties, Optical Properties, Cutting and Polishing of Gems, Manufactured Gems, of Part I, and in the main body of the book, Part II. The added and substituted half-tone illustrations are well chosen and illuminating.

New York City Minerals.—A book which should be of more than mere local interest is *The Minerals of New York City and Its Environs* by James G. Manchester. In this work Mr. Manchester has collected data regarding the localities and minerals occurring within fifty miles of Columbus Circle in New York City. The compilation has been thoroughly and conscientiously done, the half-tone illustrations are well chosen and adequate, and the information is presented in a form readily available.

TERRESTRIAL MAGNETISM

By DANIEL L. HAZARD

UNITED STATES COAST AND GEODETIC SURVEY

MAGNETIC SURVEYS

The major portion of the magnetic field work of the Coast and Geodetic Survey is now the re-occupation of selected stations all over the country at intervals of about five years, in order to determine the change of the earth's magnetism with lapse of time. With the growth of cities and industrial developments these repeat stations are one by one being rendered unfit for magnetic work, and they are being replaced by new stations. During the past summer the plan has been tried of using the triangulation stations of the Bureau for this purpose, a practice which has many advantages. The country is already covered by a network of triangulation and the meshes

of the net are steadily being reduced in size, so that before many years it will be possible in almost any locality to find a well marked station at which the latitude, longitude and azimuth have been determined accurately from the triangulation. These stations are usually placed where they are not likely to be disturbed.

The Department of Terrestrial Magnetism of the Carnegie Institution of Washington is also paying particular attention to keeping track of the secular change of the earth's magnetism. It sent out two observers in August, 1931, to re-occupy repeat stations in the West Indies, Central and South America, to be gone about a year. Their work included the

comparison of their instruments with those of the magnetic observatory at San Juan, P. R. It is also planning for cooperative work in British East Africa and in China. The Department has standardized two magnetometer-inductors made in this country to be used by Brazil in its magnetic surveys. Argentina has found it necessary to postpone the magnetic survey which it had planned to begin this year. In Canada the program of securing secular change data has been continued, and declination observations have been made at a large number of places in connection with the sub-divisional surveys of the public lands. In some of this work an airplane was used for transportation of the observer and instruments. In Mexico magnetic observations are being made at a few stations each year and an isogonic chart of the country for 1930 has been published.

MAGNETIC OBSERVATORIES

Magnetic observatories are maintained by the Coast and Geodetic Survey at San Juan, P. R.; Cheltenham, Md.; Tucson, Ariz.; Sitka, Alaska; and near Honolulu, Hawaii; by Canada at Agincourt, near Toronto and at Meanook, Alberta; by Mexico at Teoloyucan, near Mexico City; by the Carnegie Institution at Watheroo, West Australia, and at Huancayo, Peru. The Carnegie Institution cooperates with New Zealand in the maintenance of the magnetic observatory at Apia, Samoa, and the Rockefeller Foundation is contributing to the operation of that observatory and the one at Christ Church, New Zealand. A Schuster-Smith coil magnetometer has recently been installed at Agincourt and found to give results in very good agreement with the observatory standard instrument. Another comparison of the observatory instruments with the standard instruments of the Carnegie Institution was made at Washington during the past year. Through the cooperation of the Carnegie Institution (recording instruments and installation) the American Telephone and Telegraph Company and the Mountain States Telegraph and Telephone Company

(two telephone lines, one extending 56 miles in an easterly direction and the other 35 miles in a northerly direction) variations in earth current strength are now being recorded at the Tucson observatory.

POLAR EXPLORATION

Jubilee Polar Year.—During the past year there has been a notable development of interest in scientific exploration of the polar regions. In many countries active preparations are being made for participation in the Jubilee Polar Year, 1932-1933. An observing program has been worked out with great care by a committee of the International Meteorological Organization, which provides for continuous observations of meteorological conditions, terrestrial magnetism and electricity, auroras and allied phenomena at a large number of stations in the Arctic and Antarctic regions from August, 1932 to August, 1933. In the first polar year 1882-1883 observations were made at 12 Arctic and 2 Antarctic stations, and on the fiftieth anniversary of that year it is expected that most of the old stations will be reoccupied and that many new ones will be added. Existing observatories in all parts of the earth will cooperate in the work by expanding their usual activities to permit more ready comparison with the polar results. With equipment specially designed for the conditions to be encountered and a trained personnel the results obtained during this Jubilee Polar Year will no doubt furnish an outstanding example of the advantage of international cooperation in the study of problems of world-wide extent.

Graf Zeppelin.—The trial expedition of the Graf Zeppelin in the Arctic regions under the auspices of *Aeroarctic* was very satisfactory, and it is hoped that a longer flight may be made possible in 1932. During a 6-days' flight of about 8,000 miles from Berlin to Franz Joseph Archipelago, Novaya Zemlya and return, 92 determinations of horizontal intensity and 8 of magnetic declination were made.

The Wilkins-Ellsworth expedition in the submarine *Nautilus*, though limited to only 3 weeks in the Arctic ice because of delay in outfitting and in crossing the Atlantic, served as a test of the possibilities of that pioneer method of Polar exploration.

Polar Projects.—Admiral Byrd intends to leave in September, 1932, for further Antarctic exploration and Captain F. M. Williams is planning an expedition for a year or more of scientific observations in the vicinity of Fort Conger, one of the original Polar Year stations.

INVESTIGATIONS

Scope.—At the annual meeting of the Section of Terrestrial Magnetism and Electricity of the American Geophysical Union held on April 30, 1931, progress reports were presented showing an increasing number of organizations and individuals engaged in such investigations as the strength of radio reception, height of the Kennelly-Heaviside layer, interruptions of telegraph and telephone communication, relation of the Sun and Moon to terrestrial magnetism and electricity, and auroras, geophysical prospecting and others closely related to the primary interests of the section. The Carnegie Institution, Bureau of Standards, Coast and Geodetic Survey, Bureau of Mines, Naval Research Laboratory, Mt. Wilson Observatory, Perkins Observatory, Tufts College, Colorado School of Mines, Bell Telephone Laboratories, American Telephone and Telegraph Company, General Electric Company, Radio Corporation of America and many others are carrying on work of this character.

Ocean Magnetograph.—In view of the expense involved in the construction and maintenance of a non-magnetic vessel similar to the *Carnegie* for carrying on magnetic observations at sea, W. J. Peters of the Carnegie Institution has suggested a design for an ocean magnetograph to be towed submerged in a suitable container behind any vessel, which appears to have possibilities.

Auroral Observations.—Dr. J. Bartels, the well-known German mag-

netician, is spending a year as research associate at the Carnegie Institution engaged on the investigation of different features of the variations of the earth's magnetic field. With the experience gained in the first year of auroral observations at the Alaska Agricultural College and School of Mines near Fairbanks, ways have no doubt been found for overcoming the troubles encountered at the start, so that the limited results of the first year will be followed by a more comprehensive series of observations during the second year. Auroral reports from Fairbanks are now included in the "Cosmic Broadcast" sent out daily by Science Service under the auspices of the American Section of the International Scientific Radio Union. These prompt reports of magnetic conditions of the earth and sun are being found very helpful in many of the above investigations.

PUBLICATIONS

The Hydrographic Office of the United States Navy has issued isomagnetic charts of the world for 1930. The Coast and Geodetic Survey has published the results of observations made in 1925 and 1926 at its Cheltenham and Honolulu magnetic observatories, and similar publications for Sitka and Tucson are ready for the printer, while *Magnetic Declination in the United States in 1930* and *Magnetic Declination in North Carolina in 1930* are in the hands of the printer. The first publication of the results of observations at the Watheroo Magnetic Observatory of the Carnegie Institution, covering the years 1919 to 1930 may be expected in the near future. *Transactions of the American Geophysical Union, Twelfth Annual Meeting, 1931*, published by the National Research Council, contains the papers and reports presented at that meeting. Many important papers have appeared in the journal *Terrestrial Magnetism and Atmospheric Electricity*. It also gives a bibliography of current publications and articles. *El Magnetismo Terrestre en Mexico* is the subject of Boletín No. 12, Observatorio Astronómico

Nacional de Tacubaya. *Anomalies of Vertical Intensity* (in the United States) by G. B. Somers, based on the observations of the Coast and Geodetic Survey, appeared in the Colorado School of Mines Magazine.

METEOROLOGY AND CLIMATOLOGY

By BURTON M. VARNEY

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AEROLOGY AND AERONAUTICAL METEOROLOGY

Research in Atmospheric Conditions.—Research in these fields continues to develop at an accelerating pace. Among devices for increasing knowledge of current atmospheric conditions is the now perfected automatic radio sending outfit of the U. S. Army Signal Corps, weighing only 17½ ounces, designed to give continual signals from sounding balloons to direction finders on the ground. These being at the ends of a given base line and the ascensional rate of the balloons being known, wind velocities and directions at all heights become at once available. A Clinometer designed by Professor C. F. Marvin, Chief of the U. S. Weather Bureau, for determining the "ceiling" fixed by stratus clouds, consists of a sighting tube with cross-hairs for viewing a vertically projected searchlight spot on the cloud, and a pendant indicating upon an arc the angular altitude of the spot. The distance from observer to searchlight being known, the height of the cloud base or ceiling is derived by solving the right triangle involved. For determining ceilings up to 5 miles height, very powerful projectors giving a beam that spreads only 12 feet per mile have been designed.

Gas-Propelled Rocket.—Penetration to very great heights by recording instruments will shortly be an accomplished fact. Professor Goddard of Clark University, after more than 15 years of research, has so far perfected and tried out his gas-propelled rocket, that reaching heights far above the 25-mile maximum attainable by sounding balloons is assured. The rocket is driven by continuous

burning of hydrocarbon in liquid oxygen. There remains only some further development of automatic stabilizers, and of recording instruments returnable to earth by parachute, to consummate an epoch-making advance in means of studying the high atmosphere. Since the summer of 1930 provision for the future of Dr. Goddard's investigations has been assured by Daniel Guggenheim and the late Simon Guggenheim. The work is under general supervision of a committee of eminent scientists.

Greenland Stations.—Aerological attack upon Greenland continues with increasing vigor. University of Michigan Expeditions under direction of Professor W. H. Hobbs and supported by grants from the Carnegie Institution of Washington, have this year occupied two stations of the eight operated in Greenland by various nationals. One of the American stations is in latitude 75 degrees 45 minutes on the summit of a small island east of Upernivik and only two miles from the great inland ice. This station carries out daily flights of pilot balloons. The other station is at Ivigtut in latitude 61 degrees and about 12 miles from the ice. The combined results from these and other stations will be of outstanding importance to meteorology. Publication of Part I (v. V. *Scientific Series*, Univ. of Michigan Publications), Aerology, Expeditions of 1926 and 1927-29, took place in May, 1931. Professor S. P. Fergusson, who accompanied the first expedition, prepared this splendid report and is working upon the aerology and meteorology of the later expeditions. The fact of prime importance thus far established is that the atmospheric circulation over Greenland

(spoken of by Prof. Hobbs as a "glacial anticyclone") consists essentially of a surface outflow, remarkably continuous, varying in velocity and averaging over a kilometer deep, in general from southeast on the west side and from the northwest on the east side. The southeast winds in particular are often warm and damp in spite of descent from the lofty ice cap (which should theoretically warm them 1.6°F. for each 300 feet of descent and therefore "dry" them), facts which suggest that some of these winds have crossed Greenland from the Atlantic. Above the shallow and vigorous outflow exists a deep and less vigorous inflow.

Airship Base Survey.—A preliminary meteorological survey for airship bases on the middle Atlantic seaboard was completed by W. T. Van Orman. Study of the aerological data leads to the conclusion that a base should be located at least 30 miles from the outer coast and, for very best obtainable conditions, 100 miles, where maximum frictional damping of ocean winds by land is attained. Desirability of site is limited on the south in southern Virginia by high temperatures and high frequency of thunderstorms, on the north in southern Pennsylvania by cold and snow.

Weather Service.—Aerological work by the U. S. Weather Bureau, practical and theoretical, was energetically continued. The year saw great extension of the Airways Weather Service, in the number of major stations at airports and subsidiary stations in a wide zone on either side of the airways. So completely covered is the country by this network of stations that current information about atmospheric conditions is available in great detail and at almost any hour of the day or night over some millions of square miles of territory. Collection of the data and its dissemination by teletype and radio is now so voluminous that the two functions have been separated, the Weather Bureau handling the observations and the Department of Commerce the communications.

Upper Air Observations.—As a result of aerological observations dur-

ing the "International Month", December, 1929, when the Weather Bureau cooperated with the International Commission for the Exploration of the Upper Atmosphere, complete and very detailed data on the 34 observations made were published in the *Monthly Weather Review*, August, 1931. Another important contribution to aerology has resulted from a study of the records from daily airplane flights for upper air observation from the Naval Air Station at San Diego, together with data from ships and other sources. Existence of a relatively cold stratum of air over the sea and adjacent coastal lands of California, and of decided inversion of temperature above it, have been known for some years. Their extent and causes have been only partly understood. They are now known to extend in summer along the coast as far north as southern Oregon and 800 to 1000 miles south of San Diego, and 200 to 300 miles seaward. Turbulence, induced in the landward-moving air in contact with cold water bordering the coast, causes chilling and moistening of the air to a very sharply defined upper limit at 1000 to 4000 feet. The many conclusions, especially as to formation of fog and stratus cloud thereby, will be of great importance to the problem of weather forecasting on this coast, provided sufficient aerological flights can become a routine supplement to the surface observations now taken on land and sea.

MARINE METEOROLOGY AND FORECASTING

Investigation of Ocean Atmospheres.—Progress of investigation of the atmosphere over the oceans, affecting weather and climate in the United States, is taking place mainly in three directions: (1) Expansion of the Vessel Weather Service by the U. S. Weather Bureau; (2) Gulf Stream Temperature Investigations by Dr. C. F. Brooks, the Weather Bureau, and the Woods Hole Oceanographic Institution; (3) Development of indices of seasonal precipitation for California by Drs. G. F. McEwen and A. F. Gorton of the

Scripps Institution of Oceanography at La Jolla.

The Pacific.—From its beginning in 1906, when the one ship on the Pacific carrying wireless apparatus radioed a daily weather report to Washington, the Vessel Weather Service has grown to include some 240 ships of this and other countries. Observations taken at sea at 4 a. m. and 4 p. m. are radioed by these ships to the San Francisco office of the Weather Bureau, where synoptic charts embodying them are prepared and reports and forecasts broadcast by radio or dispatched by teletype to all interested marine, aviation and commercial interests,—an invaluable service.

Gulf Stream.—The Gulf Stream Temperature Investigation, referred to in the 1930 AMERICAN YEAR BOOK, has been further expanded. The Weather Bureau has compiled sea-surface temperatures by quarter months for the Caribbean Sea and the western part of the Straits of Florida, from 1919, and began this year to publish in its *Monthly Weather Review* each month the normals and departures for those regions. The late F. G. Tingley and Giles Slocum found, from a comparison of Caribbean sea-surface temperature with rainfall over the eastern United States, that the sea temperatures ran strikingly parallel to the curve of frequencies of very wet months, greater frequencies following higher water temperatures (1°F. or more of plus departure). For detailed study of the daily variations in water temperature, increasing reliance is placed upon records from sea-water thermographs installed on steamships. Some of Dr. Brooks' conclusion may be very briefly noted. In the Florida Straits as a whole, the annual sea-surface temperature range is 9°F. from 76° to 85°, but differs much from north to south. The north quarter of the Stream is 2° to 3° colder than the south quarter in winter, and 1° or less warmer in summer. August and September are the only months showing near equality of temperature throughout the Stream, when all quarters are within

1°. The pronounced difference in range seems due to the fact that the northern and weaker part of the Stream is fed largely by the Gulf of Mexico, where, compared with the Caribbean (which supplies the southern part) the water is more influenced by winds from the continent, by higher latitude, and by shallowness in part. While the seasonal changes of income of solar radiation determine the major seasonal trend of sea-surface temperatures, atmospheric influences upon the water explain the details of change, which run counter to the seasonal trend about half the time. Similar influences also determine the subsequent temperature history of the Stream in the Atlantic. "Quiet weather and little stirring produce high surface temperatures, little storage of heat, and ready discharge in the western Atlantic. Windy weather and much stirring produce moderate surface temperatures, much storage of heat and reduced immediate availability of this heat." Cooperating in the general problem, the Woods Hole Oceanographic Institution has undertaken an extensive study of sea-water thermograph records from the western third of the Atlantic. "Application . . . to possible seasonal forecasting must await the results of these and other studies."

California Precipitation.—At the Scripps Institution of Oceanography substantial progress has been made in the study of precipitation indices for California. Investigation having led in 1930 to adoption of a composite index in addition to the simple water temperature index previously used, some of the major findings are as follows. Average inshore ocean temperatures from about Aug. 1 to Oct. 15 show the most consistent inverse relation to the ensuing season's precipitation (high temperature being followed by deficient precipitation and low temperature by excess precipitation). Use of the composite index based upon inshore water temperatures indicates that prediction of excess rainfall is much more difficult than prediction of deficiency, verifications for deficiency being 80 per

cent but for excess 50 per cent. For the northern California coast, verifications based on the composite index are all but perfect except as to the amounts of departures. In predicting for the high altitudes in California, verification is now 6 out of 8 for deficiencies and 4 out of 4 for excesses.

CLIMATOLOGY

Research in this field continues to undergo a change that is very significant for the future. While descriptive compilations of the data of climate still constitute the major product, there is to be noted a stronger tendency than heretofore toward search for quantitative relationships between climate and those features of the environment that are profoundly influenced by it. Two splendid contributions in that direction may be noted. Dr. R. J. Russell completed a critical revision of Köppen's criteria and boundaries for the dry-climate regions of the United States, and presented his conclusions in a new and detailed map (Univ. of California *Publs. in Geography*, v. 5, no. 1, 1931). Dr. C. Warren Thorne-thwaite (*Geographical Review*, October, 1931) has developed a new system of classifying climates having as its bases certain relationships between "precipitation effectiveness" and "temperature efficiency" with respect to plant growth. Since these are greatly conditioned by evaporation and data on evaporation are scarce,

it was found necessary to develop a formula whereby the ratio of precipitation to evaporation could be found from monthly precipitation and temperature, thus permitting the study of any region for which these common data are known. The 12-month sums of these ratios, called the P-E indices, afford an evaluation of the effectiveness of precipitation. Similar procedures developed T-F indices for evaluating temperature efficiency. A map of North America sets forth a climatic classification according to these evaluations. Detailed parallelisms are pointed out between the new classification and plant climax formations and the distribution of soils according to climatic origin. "Geographers, ecologists, and soil scientists for the most part have been working independently of each in ignorance of the discoveries made by the other group. . . . It is hoped that soil science and ecology may find in this classification a common ground which may bring them together and which can be used in the explanation of climax formations and mature soils". In the field of regional climatology, a monumental work was completed by Professor R. DeC. Ward assisted by Professor C. F. Brooks, in preparing the section on North America for the Köppen-Geiger *Handbuch der Klimatologie*. This great work will be the indispensable reference on North American climates for many years to come.

OCEANOGRAPHY

By H. A. MARMER

UNITED STATES COAST AND GEODETIC SURVEY

AMERICAN GEOPHYSICAL UNION

Section of Oceanography Meeting.—The annual meeting of the Section of Oceanography of the American Geophysical Union was held in Washington April 30, 1931 and was devoted to a review of the progress and development of oceanography during the past year. Accredited rep-

resentatives from the U. S. Hydrographic Office, Scripps Institution of Oceanography, U. S. Coast & Geodetic Survey, Coast Guard, Department of Terrestrial Magnetism of the Carnegie Institution, Bureau of Fisheries, Buffalo Museum of Science, and the University of Washington, presented papers outlining the work carried out by their respective organiza-

tions. In addition, a report on the progress and projects of the newly-founded Woods Hole Oceanographic Institution was presented. These papers appear in the *Transactions of the American Geophysical Union* published by the National Research Council in June, 1931. A committee on the study of so-called tidal waves was appointed to coöperate with an international commission appointed for this purpose by the International Union of Geodesy and Geophysics.

ATLANTIC OCEAN

Ice Patrols and Cruises.—In March the Coast Guard resumed its annual ice patrol in the area of the Grand Banks of Newfoundland. This year turned out to be singularly free from ice menace along the transatlantic steamer lanes. In June the patrol vessel dropped ice patrol duty proper and carried out two oceanographic cruises covering the waters between Newfoundland, Labrador, and Southwest Greenland. Two parts of *Bulletin No. 19*, giving the results of the Coast Guard's *Marion* expedition of 1928, were issued during the year; Part 1, "The Marion Expedition to Davis Strait and Baffin Bay"; Part 3, "Arctic Ice, With Special Reference to Its Distribution in the North Atlantic Ocean."

Tide Observations and Surveys.—The Coast and Geodetic Survey carried on continuous tide observations at eighteen primary tide stations from Maine to Florida, and completed a tide and current survey of Buzzards Bay. Hourly current observations were made on two lightships off the coast of Massachusetts, and the wire-drag survey of western Long Island Sound was continued. Hydrographic work was carried out off the coast of Florida and in the tidal waters of South Carolina and Massachusetts. The survey of Georges Bank was continued by four ships using echo sounding and radio acoustic ranging methods. A notable result of this survey is the discovery of a submarine valley about two miles wide, having depths 2,000 feet below the surrounding sea bottom.

Proposed Passamaquoddy Dam.—The International Passamaquoddy Fisheries Commission, appointed by the United States and Canadian Governments, was engaged in a program of research to determine the possible effects of a proposed power dam in Passamaquoddy Bay on the natural economy of the region, with special reference to the herring fishery. The United States Bureau of Fisheries, the Biological Board of Canada, and the Buffalo Museum of Science are co-operating in carrying out the investigation. Field work began in July and will continue for a period of two years.

Woods Hole Investigations.—The Woods Hole Oceanographic Institution carried out investigations on the normal state and seasonal variation of the waters on the continental shelf, Cape Cod to Chesapeake Bay; on the transportation and distribution of marine sediments from the shore to the edge of the continental shelf; on the thermal interchange between the sea surface and the air; on thermal distribution and variation of the western North Atlantic based on thermograph readings taken on commercial steamship routes. Investigations in marine bacteriology comprised studies on the bacterial population in water and sediment, the rôle of microorganisms in the cycle of nitrogen in the sea, and the decomposition of organic substances in sea water and in sediments by microorganisms. The *Atlantis*, specially designed for oceanographic work, was used in a study of the "cold wall" along the northern boundary of the North Atlantic Drift; in studying the distribution and vertical migrations of plankton in relation to penetration of light; and in making hydrographic and chemical observations from Cape Hatteras to Bermuda and to Nova Scotia.

PACIFIC OCEAN

Hydrographic Surveys.—The Coast and Geodetic Survey maintained six primary tide stations in continuous operation along the coast from San Diego to Seattle, and two in Alaska. Hydrographic surveys

AMERICAN EXPLORATION

were made by one ship off the coast of California, three ships in southeastern and southwestern Alaska, and one ship in Hawaiian waters.

The Scripps Institution of Oceanography pursued the following investigations: seasonal forecasting of precipitation from ocean temperatures; depth of penetration of light; determination of boron, calcium, nitrite, ammonia, and carbon dioxide; bacteria in relation to lime deposition, and studies on phytoplankton.

The Oceanographic Laboratories of the University of Washington carried out studies on the variation of the minor constituents in sea water; and on phytoplankton, zooplankton, light penetration, radio activity, and currents, in Puget Sound. Plans were also completed for a 75-foot Diesel-driven boat having a cruising radius of 3,000 miles and equipped for oceanographic research.

Carnegie Institution.—At the Department of Terrestrial Magnetism of the Carnegie Institution the preparation for publication of the data secured on the last cruise of the *Carnegie* was continued. In addition to the observational data and a discus-

sion of the results, this work comprises the description of methods and instruments used in making oceanographic observations. The data includes temperatures and salinities at 162 stations in the Atlantic and Pacific oceans, 1500 sonic depth determinations, and a number of bottom samples and determinations of hydrogen ion concentration, oxygen, silican and phosphate content. The oxygen content of the deep water of the Pacific was found to be less than that of the Atlantic, a fact of importance in the study of oceanic circulation.

THE ARCTIC

The Nautilus Expedition.—The Wilkins-Ellsworth Transarctic Submarine Expedition in the *Nautilus* encountered difficulties in crossing to Europe and thus got off to a late start for the Arctic. Arriving at Spitzbergen August 15, it was found possible to spend three weeks in the waters of the vicinity. Sonic depth determinations and an excellent series of oceanographic observations were made. These observations go to show that the deep water of the polar basin is formed in the northern part of the Norwegian Sea.

AMERICAN EXPLORATION

BY ROBERT M. BROWN

PROFESSOR, RHODE ISLAND COLLEGE OF EDUCATION

AIR FLIGHTS

Post-Gatty.—Wiley Post and Harold Gatty in the monoplane *Winnie Mae* completed a round-the-world-flight in 8 days 15 hours 51 minutes (flying time 4 days, 10 hours, 8 minutes), covering a distance of about 15,000 miles. Leaving New York June 23, 1931 stops were made at Harbor Grace, Chester, Eng. (June 24), Hanover, Berlin, Moscow (June 25), Novo-Sibirsk, Irkutsk (June 26), Blagovyeshchensk (June 27), Khabarovsk (June 28), Solomon, Alaska (June 29), Fairbanks, Edmonton (June 30), Cleveland and New York (July 1).

Endres-Magyar.—On July 15 Captain George Endres, pilot, and Capt. Alexander Magyar, navigator left Harbor Grace, Newfoundland, in the *Justice for Hungary* and were forced down within 25 miles of their objective, Budapest, after a flight of 3,200 miles.

Boardman-Polando.—On July 28 two planes left the Brooklyn airport in an attempt to break the 4,912 mile non-stop record set by Coste and Bellonte in 1929. Russell Boardman and John Polando in the *Cape Cod* reached Istambul, Turkey, 5,011 miles after a flight of 49 hours 20 minutes

and thus established a new non-stop distance record.

Pangborn-Herndon.—The other plane, *Miss Veedol* with Clyde Pangborn and Hugh Herndon, landed at Moylgrove, Wales, after 31 hours and 42 minutes. Pangborn and Herndon continued their flight in an effort to beat the around-the-world record of Post and Gatty: after flying to Berlin, Moscow and Kharbarovsk, Siberia, they abandoned the project because of loss of time. Later Pangborn and Herndon made a record for themselves by flying from Japan to the United States without a stop, flying nearly 4,500 miles in 41 hours and 13 minutes from Samushiro Beach, Japan, to Wenatchee, Washington. The take-off occurred at 5:01 p. m. (E.S.T.) Saturday, October 3, and the pair landed at 10:14 a. m. (E.S.T.) on Monday.

Nillig-Hoiriis.—Otto Nillig and Holgar Hoiriis in their Bellanca monoplane *Liberty* reached Bremen, Germany, June 25 after a 32-hour flight from Harbor Grace, Newfoundland, with a stop at Krefeld, Germany. Their objective was Copenhagen.

Von Gronau.—On September 1, Captain Wolfgang Von Gronau, with co-pilot E. Zimmer, radio operator F. Albrecht and mechanic F. Hack in the *Groenland Wal*, completed the first scientific flight between Germany and Chicago over the northern circle route. The *Groenland Wal* left Westerland, an island off the northern coast of Germany, August 8 and made seven stops en route. It was while surveying this route that Parker D. Cramer and his colleague were lost.

Hart-McLaren.—During January, 1931, Mrs. Beryl Hart and her navigator Lieutenant W. S. McLaren, carrying a load of mail and express from New York to Paris, were lost during heavy weather after leaving Bermuda for the Azores. The wreckage of a plane was reported early in February 275 miles from Horta, Azores.

Cramer.—Parker D. Cramer with radio operator, Oliver L. Paquette, were lost between the Shetland

Islands and Copenhagen August 10. The pair were surveying an air mail route from Detroit to Copenhagen by way of Greenland and Iceland, a distance of 4,369 miles of which 2,700 miles is over the land. On September 16 a plan identified as the Cramer plane was reported picked up in the North Sea.

Robbins-Jones.—Reginald L. Robbins and Harold S. Jones twice attempted a non-stop refuelling flight from Seattle to Japan. After reaching Alaska the flights were abandoned.

Allen-Moyle.—Cecil Allen and Don Moyle, using a plane that had been considered unsafe by other aviators but which they had rebuilt, left Japan Monday, Sept. 7, 1931 for a 4,465 mile flight to Seattle. After being reported lost for nine days they were found on an uninhabited island of the Aleutian group by the Soviet steamer *Piaty Krabолоv*.

Willy Rody, with Christian Johanssen and Fernando Da Costa Viegas, left Juncal do Sol, 30 miles from Lisbon, Portugal, Sunday, Sept. 13, for a non-stop flight to New York. Battling against heavy winds and stormy skies the supply of gasoline, which was expected to last 48 hours, gave out within 36 hours and on Monday, Sept. 14 the plane came down in the Atlantic ocean 92 miles from the Newfoundland coast. Here they remained on their plane until Monday, September 21 when they were picked up by the freight steamer *Belmoira*.

GREENLAND WEATHER STATIONS

The trans-Atlantic air route across Greenland which was essayed twice as mentioned above continued to draw weather observers to the Greenland ice cap. Some of the expeditions are making an intensive study of Greenland weather in the hope that it will yield some clue to the weather of North America and Europe. Professor Wegener, the leader of the German expedition, lost his life during the past winter while returning to the coast from his central Greenland station. The German

expedition has three stations at about 70° N. latitude; one in central Greenland about 250 miles from the coast and at an elevation of 10,000 feet, another near the west coast, and the third on Scoresby Sound on the east coast. The University of Michigan stations lie along the West Coast, a northern one at about 73° N., a southern station near latitude 60° N. and the Mount Evans station at 67° N., the original station which was closed in 1929.

The British Arctic Air Route Expedition has been operating a station at latitude 66° N. in central Greenland, and another on the West Coast at about the same latitude, on the Sermilikfjord. The Meteorological Institute of Oslo also has a station on the east coast of Greenland in latitude 73° N. Scattered meteorological observations of chance expeditions of the past have been of limited value and general conclusions from them were practically forbidden, but with a wide range of simultaneous observations covering many sections of Greenland south of 73° N. latitude and carried on over a long period of time a vast amount of valuable weather data may be obtained which should yield important conclusions concerning not only the flying conditions in the vicinity but also the broader aspects of Northern Hemisphere Weather.

FIELD MUSEUM OF NATURAL HISTORY

Kish Excavation.—The Field Museum-Oxford University Joint Expedition to Mesopotamia has completed its ninth season of digging up the ancient city of Kish. Reports of a palace of the Persian kings of about 350 A.D., of buildings dating from 3500 B. C. representing the culture of the Sumerians, of jewelry worn in the court of Nebuchadnezzar, and of royal tombs dating back 5500 years have been made.

Southern China.—The Marshall Field Zoological Expedition to Southern China under the leadership of Floyd T. Smith has made a 2000 mile trip into the interior from Shanghai and had early in the season

reached the mountains about Mouping in the province of Szechwan. Many specimens have been collected and among these is one of the rare goat-antelope, the takin.

Central America.—The Third Marshall Field Archeological Expedition to British Honduras and Guatemala to excavate on the site of ancient Maya civilizations, after collecting Maya antiquities for the Museum, will transfer its activities to the southeast Peten district of Guatemala where reconnaissance work will be carried on in the dense tropical forests for other Maya sites and later they will conduct ethnological expeditions among certain modern Maya tribes in the highlands of Guatemala.

Other Expeditions.—Other expeditions of the Field Museum outside of the United States include a zoological Expedition to Sikkim, India; another to Persia; a third to Indo-China; and a fourth to Africa all for the purpose of collecting mammals; and an Anthropological Expedition around the world to make life studies of natives for use in physical anthropological exhibits.

THE AMERICAN GEOGRAPHICAL SOCIETY

Forbes-Grenfell Expedition.—The Grenfell Northern Labrador Expedition under Dr. Alexander Forbes of Harvard University in cooperation with Sir Wilfred Grenfell has announced the successful completion of its field work. O. M. Miller of the Society, topographer in charge of surveys, planned to map the coast of Northern Labrador. Several methods of mapping, including the use of oblique aerial photographs were employed so that accumulative data which can be checked, in some sense off-set the shortness of the season and rectified inaccuracies of former mapping.

The Shippee-Johnson Peruvian Expedition completed its work of mapping and aerial photographic surveying in September. The area covered by photographs include the Colea River, some seventy miles north of Arequipa, the whole of the

Chimu Valley and the ruins of Pachacamac, and the western edge of the Andes east of Lima.

THE VOYAGE OF THE "NAUTILUS"

The Wilkins-Ellsworth trans-Arctic Submarine Expedition, the first expedition to operate a submarine in the deep polar seas, returned late in September. From Spitzbergen the party planned to reach a point to the northeast of Greenland on the surface, to submerge at about latitude $81^{\circ} 30'$ N. longitude 15° W. and go to the Pole, from this point to make a zigzag passage across the unexplored region, and emerge at about latitude 74° N. longitude 162° W. west-northwest of Point Barrow. After considerable delay because of required repairs on the *Nautilus*, the expedition reached latitude $80^{\circ} 30'$ N. longitude 12° E. on August 20 and entered the ice pack and on August 23 they were 500 miles from the Pole. The soundings at this time showed jumps from 1800 to 6,000 feet, then back to 3,000, and up to 4,000 and 5,000 feet, all within a few miles. The boat was forced under ice fifteen feet thick and it was taken at least 35 miles inside the edge of the pack ice and reached a point about 450 miles from the North Pole. The first dive is reported, authoritatively, as particularly awe-inspiring, a condition caused by the hammering and rending of the ice by the superstructure of the vessel as it was forced beneath the ice floes.

The loss of the diving rudders limited the scope of the *Nautilus*, and although it was pushed repeatedly under the ice where floes were scattered, it was not possible to make an extensive trip under the more solid floes. However, much scientific work, particularly deep sea-bottom samples and gravity measurements taken at regular intervals, was accomplished through the Diving Compartment in which operating under air pressure the scientists were able to work through a door in the bottom of the vessel.

The members of the expedition

and the sponsoring institutions agree, that the *Nautilus* was not adapted to the work and that with a vessel especially built for the purpose, it would be safely possible to make a trans-arctic journey in a submarine. The *Nautilus* was a wreck after the trip and the boat was sunk.

AMERICAN MUSEUM OF NATURAL HISTORY

China.—The request of the American Museum, following the discovery of entirely new fossil fields of Pliocene age to the east of the Kalgan Urga Trail, to the Chinese Government for permission to continue explorations in that region during 1931 and 1932 has been denied. The Commission for the Preservation of Antiquities of Peiping appears to be responsible for the discontinuance of the work of the Central Asiatic Expedition and it has in like manner restricted the paleontologic and archeologic work of British, French and Swedish expeditions. The ostensible reason for this action by the Chinese Government is that a local scientific expedition has been organized to carry out scientific researches in Mongolia and that there is no longer need for the Museum to do more. Apparently propaganda against the Museum staff is responsible, in part, for the misunderstanding notwithstanding that the Museum had issued a statement and had it widely circulated throughout northern China declaring its sympathy in the preservation of all archeological and prehistoric objects and its opposition to looting and destroying these records of the ancient history of China.

Patagonia.—The American research expedition in Patagonia under the leadership of Prof. G. C. Simpson has finished its field work on paleontological fauna.

South America.—With the American Geographical Society and the New York Botanical Garden, the Museum is undertaking a comprehensive scientific survey in Northern South America under the control of the Pacaraima-Venezuela Expedition Inc. The region of exploration lies

along the headwaters of the Orinoco River between Mt. Roraima and Cerro Dinda, an area of about 40,000 square miles. The expedition plans to map this region by aerial photography; outline its physiography and geology; make collections of animal and plant life and study the Indian tribes.

Congo.—After a year's absence, Dr. J. P. Chapin of the Chapin Congo Expedition has returned from his base at Lukolela, 500 miles up the Congo River with a collection of birds.

Madagascar.—The Madagascar Expedition under Philip Du Mont and Austin L. Rand has completed two years work and has brought back a collection of birds and large mammals. All but about a half dozen of all the species of birds known to inhabit Madagascar have been gathered.

Indo-China.—The Legendre Indo-China Expedition left late in August for Hanoi from whence they will proceed southward through the mountains of Saigon.

NATIONAL GEOGRAPHIC SOCIETY EXPEDITIONS

South America.—The National Geographic Society's Venezuela-Brazil Expedition under the leadership of Ernest G. Holt returned from the boundary region between Venezuela and Brazil with a wealth of scientific material and data. The expedition traveled up the Orinoco, through the Casiquiare Canal, and to the waters of the Amazon, as a guest of the Venezuelan Commission, which in cooperation with a similar commission from Brazil, had undertaken the marking of the boundary between the two countries. The expedition was in the field for ten months, and in addition to the 3,000 specimens of birds, gathered hundreds of mammals and plants and made a large number of photographs recording types of natives, scenic beauties, and geographic features of the region. It is estimated that 50 per cent of the more than 1,000 birds of the expedition presented by the National Geographic

Society to the United States National Museum are new to the latter's collection.

Asia.—The Society participated in the Citroën-Haardt Trans-Asiatic Expedition by a grant of \$25,000 from its Research Fund toward the study of the customs of obscure tribes, and the geology, zoology, and plant life of the area through which the expedition is passing. One of its own representatives, Dr. Maynard Owen Williams, accompanied the expedition which was divided into two units, the main unit operating from Beyrouth (Beirut) through the Pamirs, and the other started from Peiping (Peking) with Sinkiang as their common objective. The Pamir unit left Beyrouth April 4 with a caravan of seven band-driven tractor-type cars of special construction. Twelve days later it reached Baghdad and made Teheran one week thereafter. It came to Kabul June 9, and going over the famous Khaiber Pass, reached Srinagar June 24. At that point news was received that almost unprecedented floods had undermined the bridges and torn out the trail in so many places that it would be utterly impossible to get the entire caravan through. So, although no wheeled vehicle ever had passed over the road to Gilgit, it was decided to leave five of the tractors behind and to push forward with the other two. Gilgit was attained on August 4. There news was received of the entire obliteration of the trail in the high Himalayas in so many places that it was decided to leave the two remaining tractors there and to journey on to Sinkiang (Chinese Turkestan) afoot, cross the 15,600-foot Kilik Pass and the slightly lower Wakhjir Pass into Northern Afghanistan. The Pamir unit expected to unite with the China unit, which had come inland from Peiping at Kashgar. M. Georges-Marie Haardt, the expedition leader, planned to have the united units make their way to Peiping, thence through Indo-China, Burma, and India, back to the starting point at Beyrouth.

OTHER EXPEDITIONS

Beebe.—Dr. William Beebe spent his third season in Bermuda waters studying the fish of the shallow waters and carrying on deep sea trawling from Nonsuch Island as a base. Dr. Beebe is giving particular attention to bottom fauna a mile and a half deep and he will attempt to reach a depth of half a mile in the bathysphere.

Venezuela.—The Syracuse (University) Andean Expedition returned early in the summer from Venezuela with specimens of animal and plant life of the Andean region as well as geographical and geological data about Venezuela. The party disembarked at Porto Cabello, Venezuela, and proceeded inland more than 500 miles to the jungles of Meridia where headquarters were established.

Guatemala.—The University of Michigan Expedition into the interior of Guatemala to explore the

old Maya City of Uaxactun and to collect specimens of Maya culture reports on their return an unusually large number of important specimens.

Australia.—A scientific expedition to study the fauna of Australia from Harvard University was under the leadership of Prof. William M. Wheeler.

Bahamas.—A Yale oceanographic Expedition to explore the waters around the Bahama Islands under Gifford C. Ewing has also been in the field.

Arctic.—Captain Donald B. MacMillan has again gone to the Arctic and established headquarters near Nain in Iceland. One of the principal objectives is the study of glaciers "to determine the possibility of the formation of another glacial age." Airplanes capable of landing and taking off on ice caps will be used.

CARTOGRAPHY

By W. L. G. JOERG

RESEARCH EDITOR, AMERICAN GEOGRAPHICAL SOCIETY

INDIVIDUAL STUDIES AND MAPS

General.—Among recent publications in cartography a growing number give evidence that the subject is being cultivated more and more by individual investigators. Government bureaus have hitherto been the main contributors to scientific cartography in this country, but, with the continued development of geography, it is only natural that increased attention should now be paid by geographers to that distinctive tool of their profession, the map. The commercial map publishers, already attuned to the needs of school and office, are responding to this stimulus also.

Map Projections.—In the field of projections S. W. Boggs has devised a "eumorphic equal-area" net which represents an arithmetical mean between the sinusoidal projection of Sanson and the elliptical projection of

Mollweide (*Geogr. Journ.*, London, Vol. 73, 1929). World maps in the interrupted form of this projection, on which each continent appears with the least distortion, have been published on a large scale, 1:31,680,000 at the equator, (A. J. Nystrom and Co., Chicago, 1931) and on a small scale, two maps in 1:105,000,000 representing the New World and the European colonial system in 1823 and 1931, (State Dept., Washington, 1931). Interruption of this type was first introduced a number of years ago by J. Paul Goode in his world maps on the homolographic projection. Mark Jefferson, whose genial touches have often enriched American cartography, presents a "Six-Six World Map" (*Annals Assoc. Amer. Geogrs.*, Vol. 20, 1930; also in his *Exercises in Human Geography*, Ypsilanti, Mich., 1930), in which sixths of the world, each containing a continent, are represent-

ed separately on an equal-area projection and grouped within a single rectangle.

Relief Maps.—In physiography E. J. Raisz contributes an article, with examples, on the application to general maps, of the "block-diagram" method so admirably used by A. K. Lobeck (see *THE AMERICAN YEAR BOOK* for 1925, p. 878), a method in which relief is genetically represented in perspective on a geometrical ground plan. Raisz has also produced a map of Cuba in 1:1,400,000 in this manner (Havana, 1929); and R. B. Frost one of Ohio in 1:1,500,000 (Oberlin, O., 1931). An excellent physical wall map of New York State, 1:4,300,000, has been published by A. J. Nystrom and Co. (Chicago, 1931). On it relief is represented in the usual manner with altitude tints, but, as the contours are reduced from the topographic sheets of the U. S. Geological Survey, the map now takes the place formerly held by the standard hypsometric map of the state on the scale of 12 miles to the inch published by the New York State Museum in 1901, a time at which the topographic survey of the state was far from complete. In political geography a well-conceived series of political wall maps of the continents on scales of 1:5,000,000 to 1:11,000,000 has been put forth under the title of *Ranally Political Series* (Rand McNally and Co., Chicago, 1931).

Historical Geography.—The geography of history is represented by an *American History Atlas* (Denoyer-Geppert Co., Chicago, 1930) edited by Professors A. B. Hart and H. E. Bolton in collaboration with David M. Matteson, known for a number of settlement maps of colonial times (see Avery's *History of the United States*, Vol. 6, and *American Nation Series*, Vol. 6). In wealth of content, technical excellence, and low price this atlas is a real achievement in American cartography. A companion *European History Atlas* by other editors has appeared under the same imprint. In the field of the history of geography an outstanding publication is the *Historical Atlas of the Great Lakes and Michigan* (104 pp.) by L.

C. Karpinski, to accompany a *Bibliography of the Printed Maps of Michigan, 1804-1880* (539 pp.) published by the Michigan Historical Commission (Lansing, 1931). The atlas contains over 100 reproductions of maps showing the evolution of knowledge of the region. A valuable series of wall maps by C. A. Burkhardt illustrating the history of Michigan (Nystrom, Chicago, 1928) may be mentioned in this connection. The lists entitled "Noteworthy Maps" by Lawrence Martin, published annually in the last three years by the Division of Maps of the Library of Congress, affords a valuable annotated catalogue of the most important recent acquisitions of this, the country's largest map collection.

Graphics.—Even in the field of graphics as bearing on geography there is evidence of new activity, as witness the three-dimensional thermoisopleth illustrating the daily march of temperature throughout the year at a given station (*Science*, April 12, 1929) by Guy-Harold Smith, author of dot population maps of Wisconsin and Ohio (*Geog. Rev.*, Vol. 18, 1928), the "Graphic Studies in Climatology" of J. B. Leighly (*Univ. Calif. Publ. in Geogr.*, Vol. 2, Nos. 3 and 13, Berkeley, 1926 and 1928), and the diagram by S. W. Boggs illustrating seasonal variations in daylight, twilight, and darkness (*Geogr. Rev.*, Vol. 21, 1931).

OCEANOGRAPHY

Charts.—Space permits consideration of only one other group of maps, viz. those bearing on oceanography. An important series of four charts has been published by the Hydrographic Office in Washington showing the sounded areas in the South Atlantic, the North and South Pacific, and the Indian Oceans (on the backs of various 1931 issues of the Pilot Charts of those oceans). As is well known, the sounded areas represent only a small fraction of the total ocean bottom, but the new tool supplied by the echo depth finder opens the way to a rapid disclosure of the major submarine relief features of the still unsounded areas. The chart of the

XX. GEOPHYSICAL SCIENCES

North Pacific illustrates this new type of work for it shows the eight profiles run by the U. S. S. *Ramapo* in 1929-31 across the unsounded areas of that ocean. The purpose of the maps is to stimulate further echo sounding.

Bartlett Maps.—Other maps dealing with oceanography published during the year show the sea surface

temperatures obtained by Capt. Robert A. Bartlett on the *Morissey* from Newfoundland to East Greenland in 1930 (back of Pilot Chart of the North Atlantic for June, 1931) and the steamship services operating throughout the world under the American flag (Bureau of Research, U. S. Shipping Board, Washington, 1931, with text).

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

(For further information, the reader may address the following organizations)

AMERICAN ASSN. OF PETROLEUM GEOLOGISTS, Box 1852, Tulsa, Okla.

AMERICAN GEOGRAPHICAL SOCIETY, Broadway at 156th St., N. Y. C.

AMERICAN METEOROLOGICAL SOCIETY, Clark University, Worcester, Mass.

APPALACHIAN MOUNTAIN CLUB, 5 Joy St., Boston, Mass.

ASSOCIATION OF AMERICAN GEOGRAPHERS, University of Minnesota,

Minneapolis, Minn.

EXPLORERS CLUB, 544 Cathedral Parkway, New York City.

GEOLOGICAL SOCIETY OF AMERICA, Columbia University, New York City.

NATIONAL GEOGRAPHIC SOCIETY, Washington, D. C.

SEISMOLOGICAL SOCIETY OF AMERICA, Clark University, Worcester, Mass.

SOCIETY OF ECONOMIC GEOLOGISTS.

DIVISION XXI

CHEMISTRY AND PHYSICS

INORGANIC AND PHYSICAL CHEMISTRY

By HUGH S. TAYLOR

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WAVE MECHANICS AND CHEMISTRY

Application.—The outstanding development in 1931 in the subject of theoretical chemistry is the penetration of the new technique of the mathematical physicist, the wave mechanics, into the sphere of the chemist. This development could have been forecasted by those who noted the advances made in the more physical aspects of the subject but the rapidity with which the application to chemical problems is now being made may be a source of surprise to the uninitiated. The earlier work of Heitler and London (*Z. Physik*, 44, 455—1927) led to an approximate theoretical calculation of the energy of formation and of some other properties of very simple molecules such as the hydrogen molecule. It also provided a formal justification for the idea of an electron-pair bond first put forward by G. N. Lewis in 1916 and since employed with such conspicuous success in the interpretation of many facts of compound formation and valence in chemistry.

Conclusions From Pauling's Treatment.—During 1931 this method of approach to the nature of the chemical bond has received a considerable impetus largely as the result of communications by Pauling and by Slater. (*J. Am. Chem. Soc.*, 53, 1367, 3225—1931; *Phys. Rev.*, 37, 481; 38, 325—1931.) From Pauling's treatment one reaches the following summarised conclusions: the elec-

tron-pair bond is formed through the interaction of an unpaired electron on each of two atoms. The energy of the bond is largely the resonance or interchange energy of the two electrons, whose spins are opposed when the bond is formed. Two electrons which form a shared pair cannot take part in forming additional pairs. The main resonance terms of the bond are those involving one characteristic function (eigenfunction) from each atom, the bond tending to be formed in the direction with the largest value of the eigenfunction when two are possible. Further examination of the characteristics of atoms in which only *s* and *p* eigenfunctions contribute to bond formation and in which the quantisation is broken, shows that quantum mechanically such atoms can form one, two, three, or four equivalent bonds which are directed towards the corners of a regular tetrahedron—a conclusion providing a quantum mechanical justification of the organic chemist's concept of the tetrahedral carbon atom and the associated science of stereochemistry. It confirms also the chemist's assumption of a free rotation about a single bond and no rotation with a double bond. More complex eigenfunctions lead to the possibility of six equivalent bonds directed towards the corners of either a regular octahedron or a trigonal pyramid. Such bonds exist in many complexes formed by elements from the so-called transition groups in the

periodic table. Pauling also indicates the usefulness of magnetic data in determining which eigenfunctions are involved in bond formation.

In his second communication Pauling discussed the one-electron and the three-electron bond. The criterion for the former is the possible existence of two electronic states of the system with essentially the same energy, the states differing in that for one there is an unpaired electron attached to one atom and in the other the same unpaired electron is attached to the second atom. The quantum mechanical analysis of this criterion leads to a confirmation of an assumption previously made by Sidgwick (*Electronic Theory of Valency*, London, 1929, p. 103) that in boron hydride, B_2H_6 , there are two one-electron bonds. Pauling, however, points out that the lavish use of one-electron bonds, notably by some English authors, is without justification. In a similar manner a three-electron bond may exist when there are two configurations $A:B$ and $A::B$ of essentially the same energy. Such a bond probably exists in nitric oxide, NO . The normal oxygen molecule is also said to contain one electron-pair bond and two three electron bonds. The assumption of a three-electron bond in NO leads also to interesting explanations of the puzzling magnetic properties of a variety of compounds containing the nitroso-complex. The one- and three-electron bonds are less stable than the electron-pair bond, the dissociation energy being roughly half as great.

Slater's discussion of the problem follows similar lines to that of Pauling's, the tetrahedral direction of valencies being obtained by combinations of three p wave functions and one s function. Slater postponed the mathematical treatment to a later paper. In the meantime he has discussed the structure of such radicals as NO_2 - and $C10_2$ - from the standpoint of directed valencies and shows that these latter lead to a coplanar

structure for the first, a pyramidal one for the second, as is observed by x -ray analysis. He concludes that the valence model will be bound in a stable structure, and that it is more stable and thus nearer the real model than the purely ionic structure.

REACTION MECHANISM

Determining Velocity.—Turning from the contributions of wave mechanics to chemical structure and chemical bonds, we can next call attention to developments using the same technique aiming to determine the velocity with which simple molecules react. As is well known not every collision between molecules capable of undergoing chemical change results in actual interaction. It is known that only collisions which involve a definite critical energy of collision lead to reaction. This energy quantity is now known as the activation energy of the process. It is to the wave-mechanical calculation of such activation energies that recent developments lead. Eyring and Polanyi (*Z. physikal. Chem.*, 12B, 279—1931) have used the methods of the wave mechanics to calculate the activation energies of such simple processes as the interaction of hydrogen atoms with parahydrogen or with bromine molecules and the reaction of bromine atoms with hydrogen molecules. The initial and final states of such reactions are in reality two minima of energy obtainable with the three atoms in question in the reactions cited. These minima are separated by a chain of mountains of energy. The problem of finding the activation energy is really the problem of finding the lowest pass between the mountains which will lead from one energy-minimum valley to the next. The calculation of the topography of such an energy-map goes back to London's treatment of the forces leading to the binding energy of atoms. It is composite of a classical coulombic binding and a non-classical, wave-mechanical, resonance en-

ergy which, in certain simple cases, has already been calculated. A number of other examples are in process of calculation. When a third atom approaches such a two-atom system it is possible to calculate in certain special cases the energy of the system as a function of the atomic distances obtaining. Calculation shows that the smallest increase of potential energy of the system occurs when the third atom approaches along the line of centres of the other two atoms. This is the most vulnerable point of attack of a molecule by an approaching atom. Calculations of the energies involved in such a straight-line approach of an atom to a molecule yield results for the height of the energy-mountain pass which are in fair accord with the best available data from practical experience concerning the activation energies. Indeed, while a year ago it was believed that such three-atom processes had in general negligibly low activation energies, it has now been shown experimentally, largely under the stimulus of the theoretical calculations, that many such atom reactions may have quite large activation energies.

Eyring's Deductions.—An important extension of this method of attack to reactions between two diatomic molecules has also been made by Eyring, (*J. Am. Chem. Soc.*, 53, 2537—1931) chiefly with hydrogen and the halogens, fluorine, chlorine, bromine and iodine. For this case, Eyring finds that the approach of the two molecules involving the minimum activation energy of reaction is that in which all four atoms of the two molecules lie in one plane. He deduces from his calculations values for activation energies in good agreement with known experimental data. Further, by comparison of such molecule reactions with those which involve the interaction of atoms of the one kind of molecule with molecules of the other he shows that the mechanism obtaining in certain reactions of hydrogen and the halogens is certainly via the atomic path, in

others via collision between two molecules. His conclusions confirm present accepted ideas in this regard. The data further show why the interaction of metal vapors such as sodium with the series methyl iodide, bromide, chloride, fluoride should show a progressively decreasing rate of reaction at a given temperature throughout the series. This fact is beautifully illustrated by some recent experiments of Hartel and Polanyi. (*Z. physik. Chem.*, 11B, 97—1930).

The quantum mechanical treatment of heterogeneous systems has already had a beginning. London (*Z. physik. Chem.*, 11B, 222—1930), in a discussion of the properties and applicability of molecular forces from this standpoint has shown that the idea of superposition of such forces can be utilised to reproduce certain of the experimental data on the heats of adsorption of gases at charcoal surfaces, from which heats the variation of the extent of adsorption with temperature at a given pressure is readily calculable. Such calculations do not apply to associations of gases with surfaces in which the nature of the binding is, as London emphasizes, more of the nature of that operative in normal valence-binding, and, therefore, involving, quantum mechanically, the non-classical resonance energy rather than the molecular or van der Waals' forces. Experimentally, considerable progress has been made in the past year in exhibiting the possibility of a gas being bound to a surface by one or other types of binding depending on the working conditions. Thus with metals such as nickel and copper, hydrogen appears to be bound by the molecular forces in the neighborhood of liquid air temperatures but, as shown by Benton and White, (*J. Am. Chem. Soc.*, 52, 2325—1930; 53, 3301—1931) from about -110 upwards a much stronger binding of hydrogen to the surface obtains. A similar observation with respect to nitrogen on tungsten has recently been made by Messner and Frankenburger (*Z. phy-*

sik. Chem., *Bodenstein Festschrift*, 593—1931) but at much higher temperatures. Particularly good examples of the two types of binding of hydrogen, one involving heats of adsorption of 1000-2000 calories the other of 20,000 calories have been obtained by Taylor, Williamson and Sickman (*J. Am. Chem. Soc.*, 53, 578, 2168—1931; *Nature*, 128, 636—1931) on oxide surfaces. It has been shown that the stronger binding is only slowly achieved at low temperatures, but that the velocity of adsorption increases with temperature as do ordinary chemical reactions. The adsorption process requires an activation energy. It has, therefore, been termed activated adsorption to distinguish it from the ordinary adsorption due to the molecular forces discussed above.

Adsorption Reactions at Surfaces.—Undoubtedly such activated adsorption is a preliminary to chemical reaction at the surface. The strength of the binding assures a long period of association of the molecule with the surface. Born and Franck (*Nachr. Gotting. Ges.*, 77—1930) see in this time of adsorption a possible quantum mechanical explanation of adsorption reactions at surfaces. The time of adsorption of two neighboring molecules between which a reaction is possible, being much longer than the duration of a gas kinetic collision, may be adequate to permit the molecules to pass through the energy-hump which separates the initial reactants from their final condition. The calculations which were applied to the possible formation of hydrazine from hydrogen and nitrogen have been more recently generalised by Born and Weiskopf. (*Z. physik. Chem.*, 12B, 206—1931). These latter specifically point out, which is undoubtedly true, that other factors such as lowering of the actual activation energy, the loosening of primary bindings by association with the surface, intermediate reaction with surface atoms can all be of controlling importance; but, quantum-mechani-

cally, the effect of adsorption-time to which they direct attention is also worthy of some consideration. Schuster (*Z. physik. Chem.*, 14B, 249—1931) in a recent paper on the hydrogenation of ethylene at carbon surfaces finds a low activation energy for the reaction which he suggests may be due to reaction between adsorbed molecules that have remained in contact with one another a sufficiently long time for the mechanism postulated by Born, Franck and Weiskopf to occur.

Overvoltage at Electrodes.—Gurney (*Proc. Roy. Soc.*, November, 1931) carries the quantum mechanical method into quite another field of heterogeneous chemical systems in that he has succeeded in giving an interpretation of many of the numerical results obtained in a study of overvoltage at electrodes. The effects discussed by him involve influences operative in the solution surrounding the electrode. Actually, as is well known, the nature of the surface also influences the overvoltage. An interpretation of this surface effect quantum-mechanically, would have far-reaching significance since the final stage in this surface process undoubtedly represents the initial stage in the process of activated adsorption discussed above. Gurney's work is of especial significance in that it is a new approach to the electrochemistry of solutions, with which, it is promised, the classical problems of concentration cell voltages can be examined anew.

CHEMICAL KINETICS

In the field of chemical kinetics there have been notable developments of ideas discussed in these pages in earlier years. The intensive cultivation of this field has brought changes in earlier ideas. The number of well-investigated bimolecular reactions has been further decreased by the proof by Volmer and Kummerow (*Z. physik. Chem.*, B9, 141-153—1930) that the nitrous oxide decomposition is not a bimolecular but a unimolecular process. Similarly it

has been shown by Beaver and Stieger that (*Z. physik. Chem.*, 12B, 93—1931) the decomposition of chlorine monoxide is not a simple bimolecular process but a complicated succession of reactions, another case of reaction chains. In the field of oxidation reactions good progress has been made in estimating the relative importance of the surface as an initiator and of chains in the gas phase in a full description of these technically important processes. It is apparent, however, that much still remains to be done before there is order in this domain.

DETERMINATION OF ELECTRIC MOMENTS

The study of electric moments of chemical molecules is being vigorously pushed to decide questions of chemical structure and properties of linkages. Recently Sutton has (*Proc. Roy. Soc.*, 133A, 658—1931) compared the dipole moments of saturated and unsaturated substances in an effort to associate the "electron shift" occurring on substitution with the effect of the substituent on the direction of subsequent substitution. He finds that there is an electron shift towards the

benzene ring when the group substituted is ortho-para directing, and away from the ring when it is meta-directing. This does not necessarily mean, however, that the dipole moment is the principal determining factor in such directed substitutions. Sidgwick has utilised the determination of electric moments and also parachors to elucidate the structure of carbon monoxide and the isocyanides. He concludes (*Chem. Rev.*, 9, 77—1931) that the isocyanides, the fulminates and carbon monoxide may be called compounds of bivalent carbon.

CONCLUSIONS

The examples cited in the preceding pages illustrate well the newer orientation of work in the field of general and theoretical chemistry. Research in this branch of the subject calls more and more for the training which the physicist and mathematician provide. How far such men will displace the standardised chemist of the last generation is an interesting problem for the present decade. The effect on chemistry will, however, in any event be profound.

ORGANIC CHEMISTRY

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HIGHER HYDROCARBONS

One of the outstanding reasons why organic chemistry is usually considered apart from other branches of chemistry is the very large number of compounds with which it deals. It is simple to demonstrate that there is, and that there should be, only one methane, one ethane and one propane and that isomers (2 butanes, 5 hexanes, etc.) should occur with the higher members. These paraffin hydrocarbons all have the general formula C_nH_{2n+2} , from which we might calculate that eicosane is $C_{20}H_{42}$ and triacontane, $C_{30}H_{62}$. But the problem of finding the number of isomeric

eicosanes or tricontanes is a different matter. Similarly, the alcohols are $C_nH_{2n+1}OH$. No simple formulas have been developed by which it would be possible to calculate the number of isomers in these series. During the past year, formulas of the recursion type have been advanced by Henze and Blair which permit a solution of the problem. Thus, from the small number of simple alcohols, the family grows by 507 with the decyl alcohols ($C_{10}H_{21}OH$). The number of eicosyl alcohols reaches the staggering total of 5,622,109. Needless to say, most of these have never been synthesized. The eico-

sanes total only 366,319 but the triactanes number over four billion.

A new synthesis of some of these heavy hydrocarbons has been described by Carothers and co-workers. They permitted sodium to react on decamethylene bromide, $Br-(CH_2)_{10}-Br$, in ether. This gave rise to a mixture of straight chain paraffins, C_nH_{2n+2} , where n is ten or a multiple of it. Of these, the C_{40} , C_{50} , C_{60} and C_{70} compounds are new.

Using very efficient fractional distillation methods, Whitmore and Wrenn have separated diisobutylene (the C_4H_{10} hydrocarbons formed by combining two molecules of isobutylene, (C_4H_8) into two isomeric 2, 4, 4-trimethylpentenes which boil but three degrees from each other. The lower boiling α -olefin is present in about four times the quantity of the β -isomer.

NITROGEN BASES FROM KEROSENE

Thompson and Bailey isolated a base, $C_{18}H_{25}N$, from that portion of the crude kerosene distillates which is extracted by liquid sulfur dioxide. Its structure seems to be related to that of quinine. It is thought to be a tetracyclic compound in the same sense that anthracene or carbazole are tricyclic compounds. Two of its four rings are related to cyclopentane and two to pyrrole, the last two holding the nitrogen atom in common. Such progress in this field of organic chemistry strengthens the claim that petroleum presents a great wealth of organic nitrogen compounds.

PYROLYSIS

Many studies dealing with pyrolysis (thermal decomposition) have been reported. Methylallene and ethylacetylene (Hurd) were found to polymerize into liquids. In an attempt to find initial pyrolytic temperatures for certain hydrocarbons, Norris heated pure hydrocarbons at definite temperatures for long periods. Geniesse and Reuter showed that similar results in pyrolysis are obtained by increases in temperature

or in time. High-temperature results at short contact times may be approximated by long times at lower temperatures. Every rise of $17^\circ C$ in temperature roughly halves the time.

A suggestive mechanism for pyrolyses which postulates scission of the molecule into radicals has been proposed by Rice. To stabilize themselves, these radicals are considered to appropriate a hydrogen atom from an adjacent undecomposed molecule thereby creating new radicals which repeat this process. These reaction "chains" may be compared to a row of dominoes standing on end, wherein the energy imparted to occasion the fall of the first domino is sufficient to tip over the entire row.

Stewart and Olson have studied the decomposition of simple hydrocarbon gases by electron impact in highly evacuated tubes, using methods of positive ray analysis. As a result of electron impact (from a hot filament) one electron is considered to be ejected with or without the simultaneous scission into hydrogen atoms or methyl radicals. With propane (C_3H_8) as example, it may be considered to change into $C_3H_7^+ + E^-$ or into $C_2H_5^+ + CH_3 + E^-$ or into $C_2H_5^+ + CH_3 + 2E^-$ or into $C_3H_7^+ + H + E^-$, wherein E^- is an electron.

COMBUSTION

G. Jones, Perrott and others have demonstrated that the maximum flame temperatures of hydrocarbon gases vary from $1880^\circ C$. for methane to 1975° for ethylene, with intermediate maximum temperatures for ethane, propane, butane, propylene and butylene. The flame temperature depends on the proportion of combustible gas in the air and the maximum temperature is reached when the mixture contains combustible slightly in excess of that necessary to consume all the oxygen present. In another type of combustion study which was concerned with the knocking characteristics of 27 paraffin hydrocarbons, Boyd reported that in a

homologous series the tendency to knock increases with the increasing length of the carbon chain and in an isomeric series it decreases as the number of side chains is increased. The introduction of methyl groups into a carbon chain of given length also decreases the tendency to knock.

SYNTHETIC RUBBER AND RESINS

Starting with acetylene, Nieuwland, Calcott and others have perfected the details for the preparation of mono- and di-vinylacetylenes, which are polymers of acetylene. An acid cuprous chloride catalyst is the agent in this process. Divinylacetylene is a volatile liquid and it must be handled with care to avoid explosions. It changes readily into a resin which is very inert chemically. Monovinylacetylene is interesting for it adds hydrogen chloride to produce 2-chlorobutadiene or "chloroprene," so named because of its resemblance to isoprene. In common with isoprene, Carothers and co-workers have shown that chloroprene is capable of polymerization to a synthetic rubber which is remarkably like natural rubber. The low cost of natural rubber has obviated the need of a synthetic rubber with identical properties. It is interesting, therefore, that this new rubber is more resistant to penetration by water, less strongly swelled by volatile hydrocarbons and less permeable to many gases than natural rubber. Furthermore, it is much more stable towards oxygen, ozone, hydrogen chloride and other chemicals. Finally, attempts to impregnate such porous materials as leather, wood, tile, etc., with natural rubber have been unsuccessful whereas a very intimate impregnation with chloroprene is readily accomplished.

Isomeric with chloroprene is 1-chlorobutadiene, and chloroprenecarboxylic acid is γ -chlorovinylacrylic acid. Muskat synthesized these substances and found that they polymerize on standing into solids which are insoluble in most solvents. Akin to polymerization is the observation

of Conant and Scherp that isoprene readily adds two triphenylmethyl radicals. Sullivan and Voorhees have investigated lubricating oils made by the polymerization of olefins with aluminum chloride. These results have reached the commercial stage and the products are claimed to be well suited for uses where constancy of viscosity with varying temperature is desirable. Using high temperatures and pressures up to ten atmospheres, Pease reported that at least half of ethylene may be polymerized in a second order reaction (one wherein the time required to reach a given stage is inversely proportional to the concentration) to gaseous or liquid mono-olefins without the formation of more than traces of hydrogen or saturated hydrocarbons.

GUMS AND SUGARS

Recent studies on the constitution of gums such as gum arabic, mesquite gum, flaxseed mucilage, cholla gum and gum tragacanth have shown them to consist of an acidic nucleus, usually glucuronic acid, to which various sugar units are attached. Cherry gum, according to Butler and Cretcher, also conforms to this picture. Hydrolysis in acid solution shows the presence of glucuronic acid, pentose sugars (xylose and arabinose) and hexose sugars (galactose and mannose). Glucuronic acid is a constituent (Peterson and Fred) of the gum produced by root nodule bacteria of pea and red clover. After the removal of fermentable sugars of the gum by yeast and bacteria, an unfermentable reducing substance was left which was very similar to the material obtained in 1929 by Heidelberg, Goebel and Avery from the soluble specific substance of Type III *Pneumococcus*. Thus, many of the most interesting problems associated with research in this field are suggested by the fact that the soluble carbohydrates elaborated by the pneumococci have the property of reacting type specifically with pneumonia antisera.

Another approach to the same

problem has been to hydrolyze a material (phosphatide A-3) from human tubercle bacillus. Thus, Anderson was able to isolate a carbohydrate-phosphoric acid and a neutral carbohydrate. The latter is a new sugar named maninositol, since it was shown to be made up of equal parts of mannose and inositol.

Supplementary to the information that the mold *Aspergillus niger* changes glucose into citric acid, it is of interest to learn that good yields of kojic acid come from glucose with *A. flavus* (Herrick and co-workers). A semi-commercial plant for the production of fructose from Jerusalem artichoke has been operating (McGlumphy, Hixon) during the past year. Also, Balch and Paine have developed a semi-commercial unit to extract starch from cull sweet potatoes.

The reaction mechanism for the change of xylose and other pentoses into furfural has been elucidated by Hurd and Isenhour. This is based on a study of these sugars towards various acids. Sugars are considered to exist in both open chain (aldehyde) or cyclic (acetal) forms. Evidence that oximes of sugars exist in both forms has been supplied by Wolfson, who has also found that Phenylhydrazones of sugar acetates have the open chain structure.

PHENOLS

The conversion of phenols into phenol ethers by reaction with olefins or ethylene oxide or allyl alcohol and sulfuric acid, and the subsequent rearrangement of these ethers into ortho-substituted phenols has been the subject of an extended investigation by Niederl. Klarmann and also Kamm have found that the bactericidal properties of the monoethers of resorcinol is distinctly similar to the isomeric nucleus-substituted alkylresorcinols. Noteworthy is the fact that the germicidal effect of these compounds differs markedly in their behavior towards *B. typhosus* and *Staph. aureus*. Brewster and Harris have synthesized halogen derivatives

of acyl and alkylresorcinols, which may be of value in connection with germicidal studies. Only a very slight antiseptic action is exerted by phenylboric acid and Johnson found that *m*-aminophenylboric acid possesses no bacteriostatic effect.

The synthesis of several analogs of adrenaline and ephedrine, namely, the phenolic arylpropanolamines, was accomplished by Hartung and others in order to determine the changes in physiological activity due to minor alterations in molecular architecture. Suter and Oberg have prepared a number of local anesthetic derivatives of diphenyl ether, but thus far all have been too toxic for practical use.

Mention should be given to the work of Small and Cohen on the desoxycodines which is of importance in connection with the complex picture of the chemistry of morphine.

GENERAL ITEMS

Using auric chloride with grignard reagents, Kharasch has synthesized organic gold compounds. Several workers (Gomberg, Bogert, Kohler) have been interested in studying the reducing effect of the $=CHOMgBr$ grouping on aldehydes. In this way, Bogert synthesized 2-piperonylidene-ethanol and proved it to be simpler in structure and different from natural cubebin with which it was once considered to be identical.

Finally, the experiments of Adkins on catalysts have revealed that copper chromite is the most effective catalyst for the hydrogenation of esters to alcohols. Yields of lauryl and myristyl alcohols from ethyl laurate and ethyl myristate were 98%, using a hydrogen pressure of 220 atm. and a temperature of 250°. The same catalyst appears to be quite superior to nickel catalysts in general hydrogenation. Adkins has also found that an oxide catalyst containing equal amounts of iron and molybdenum is the best one thus far described for the oxidation by air of methanol to formaldehyde. It retains its activity for months and at 373° it converts 90% of the alcohol to the aldehyde.

CARBOHYDRATES

Sugar.—Minute quantities of non-sugar substances in direct-consumption white sugars and the effect of these on the suitability of the sugar for various uses, particularly in cases where it is necessary to heat the sugar, continue to be of great interest to both manufacturers and consumers. Ambler and Byall have developed methods for determining some of these substances as the first step in tracing their origin to the sugar-producing plant, to cultural conditions under which the plants are grown, or to certain steps in the manufacturing processes, with the final object of eliminating these objectionable impurities from white sugar. Cameron and Yesair, and Toulouse, Buchanan and Levine have reported on the bacterial contamination of white sugars. This question is now receiving active attention with the object of producing reasonably sterile sugars for use in the canning and bottling industries.

Honey.—A number of investigations relative to the colloid constituents of honey have been conducted by Paine and Lothrop who have shown that many of the physical and chemical properties of honey are influenced by the colloids present; that removal of colloids by treatment with bentonite greatly improves honey from the standpoint of appearance and its ability to withstand elevated temperatures when used in various products, such as candy; and that the low caramelization temperature of honey is caused both by the decomposition of colloid constituents and the formation of melanoidins due to reaction of reducing sugars with amino acids or related nitrogenous compounds. The deterioration and spoilage of honey on storage have been further investigated by Marvin who reports that yeasts are primarily responsible for honey fermentation, and granulation with accompanying de-

crease in density brings about conditions favorable to their activity.

Inulin.—In connection with the investigation of the carbohydrates of uncultivated plants conducted by the Bureau of Chemistry and Soils, it was found that a number of plants used for food by the Indians contain inulin as the principal carbohydrate. Apparently inulin, which is practically absent from the diet of white civilized peoples, played an important rôle in the diet of the North American Indians. A soluble inulin, somewhat different from inulin obtained from the usual sources, was found in some of these plants. A simple and inexpensive method applicable to production of inulin on a large scale was developed.

INSECTICIDES

Plant Sources.—Much work has been done during the past year on insecticides of plant origin. Little has called attention to promising insecticidal properties of *Cracca virginiana*. Shepard has shown that rotenone is more toxic to *Aphis rumicis* and to mosquito larvae than is nicotine. The structure of rotenone has been investigated by chemists of the Bureau of Chemistry and Soils. Darley has compared the toxicity of rotenone, nicotine and pyrethrins to certain insects. Jones and Davidson have reported on preparations containing rotenone for use as insecticides and on the loss in toxicity of rotenone when kept in certain solutions.

New Products.—Of the various inorganic materials proposed as substitutes for the arsenicals, certain compounds of fluorine continue to give the most promising results. Marcovitch and others report that cryolite or barium fluosilicate on peach trees gave better control of the oriental fruit moth than did lead arsenate and that it did not cause any foliage injury. Carter has pointed

out that lime is incompatible with fluosilicates, forming calcium fluoride. Certain oil emulsions have been found to protect seed corn from injury by stored grain insects. Spray residue removal continues to be an important problem. Recent developments in this field have been summarized by Fisher. Robinson has reported that when certain organic solvents such as alcohol, benzol, acetone, kerosene, etc., are added to the hydrochloric acid washing solution, the arsenical residue on apples is removed more effectively. Kerosene seems to be the most practicable for the purpose.

Methods.—Martin and Tattersfield have developed a new method for the rapid and approximate evaluation of unadulterated samples of pyrethrum flowers which is applicable to small quantities and which can even be used on single flowers if suitably modified. Vollmar has shown how pyrethrin I can be determined in kerosene extracts of pyrethrum, if they are known to contain no interfering substances. Tattersfield and Hobson have studied the permanence of the pyrethrins in alkaline spray fluids of varying hydrogen ion concentration and have proven that they are more permanent than ordinarily supposed. Shepard and Richardson have developed an improved method of determining the relative toxicity of contact insecticides to *Aphis rumicis*. Campbell and Leukins have developed a method for determining very minute quantities of lead, in which they show that at least one-fourth of a moderate lethal dose of acid lead arsenate goes into solution within the gut of the silkworm during its survival period.

Attractants.—Much work is being done to determine the chemotropic responses of insects. Folsom has described an apparatus for testing the chemotropic reactions of the cotton boll weevil. He finds that ammonia and trimethylamine, which are volatile constituents of the cotton plant, are attractive to the boll weevil. Baits designed primarily for attract-

ing the codling moth and the oriental peach moth to traps have received much attention during the past year. Certain aromatics such as methyl cinamate when added to molasses have been found to be quite attractive to moths.

INDUSTRIAL FERMENTATIONS

Research.—The outstanding event in the field of mold fermentations has been the publication of the results of the intensive research carried out on the biochemistry of molds in the laboratories of the Nobel Industries Ltd., for the past nine years. Peterson and Fred, and their co-workers at the University of Wisconsin, have initiated a project concerning the formation of sterols by molds. One paper of a preliminary nature dealing with this work has appeared within the past year. As a result of investigations carried on in the Bureau of Chemistry and Soils, an organism of the *Aspergillus flavus* group has been found which gives excellent yields of kojic acid from glucose, amounting to nearly 50 per cent.

Methods.—The long felt need of an analytical method for the determination of mixtures of organic acids and alcohols has been filled by Werkman in a number of papers dealing with the application of partition methods to quantitative determination of acetic, propionic and butyric acids and of ethyl and butyl alcohols in fermentation mixtures. A scheme for continuous fermentation in the production of lactic acid has been developed by Whittier and Rogers. Control methods used in this process can no doubt be applied to other fermentation processes.

TANNING MATERIALS, HIDES, AND LEATHER

The Nichols Medal award for 1931 was made to John Arthur Wilson, in recognition of his contributions to colloid chemistry, applied particularly to leather and sanitation. The movement toward the development of international methods for the analyses of tannin materials and leather

continues to gain in momentum, as is evidenced by the numerous international commissions that have recently been set up, especially by the leather chemist organizations in Europe.

The disposal of factory effluent is a vital subject in connection with river pollution. A condensed report by the Tannery Waste Disposal Committee of Pennsylvania gives the results of the work of the Pennsylvania Committee for the past six years on treating tannery effluents. Cameron and McLaughlin have contributed toward a more accurate knowledge of liquor acidity and the composition of non-tannins, in which methods are developed for estimating separately the acetic, lactic, and gallic acid content of vegetable tanning liquors and also the ether extractable non-tannin constituents of a phenolic nature. As an aid to those interested in the study and determination of the physical properties of leather, Spiers has published a series of bibliographic papers in which about four hundred references on the subject are listed.

CEREAL CHEMISTRY

Coleman and his associates in the Bureau of Agricultural Economics have published the results of milling and baking tests on 412 varieties of wheat representative of the commercial types grown in 38 different countries, and of 431 samples of cargo wheat, that is, wheat found in international trade channels. These results give for the first time a comprehensive viewpoint on the milling and baking qualities of world wheats. Herd has shown that when flour is heated to give it the maximum baking qualities the imbibitional powers of the protein are slightly but definitely changed, while the solubilities or physical properties are not altered nor is the enzymic activity diminished to any appreciable extent. Proteolysis of bread doughs during fermentation has been studied by Bailey and Brownlee.

PHYTOCHEMISTRY

Quinic acid has been isolated from prunes and cranberries, which ac-

counts for the excretion of hippuric acid in greater amounts than could be accounted for by their benzoic acid content. In addition to the usual organic acids found in plants, examination of wheat, barley, maize, oat, and rye plants by E. K. Nelson and his co-workers shows that they contain aconitic acid. Further important chemical work on the chlorophyll series was undertaken by Conant and his associates. A method for the purification of lecithin has been given and the detoxication of nicotine by ultraviolet rays has been suggested.

NUTRITION

Proteins.—New results have been obtained by Bancroft and Rutzler showing that coagulated protein, such as egg white, can be peptized so that the resulting solution will have the properties of the original, native albumin. Anson and Mirsky have also contributed new data on the reversibility of protein coagulation. Dakin and co-workers have isolated the amino acid, hydroxyglutamic acid, from liver, which was found to be highly active in cases of pernicious anemia. Jones has proposed specific factors for converting percentages of nitrogen into terms of protein in calculating food values to replace the conventional factor 6.25, long used by nutrition specialists.

Vitamins.—Important work on the relation of carotene to vitamin A has been carried on. Work done by Nelson, Tolle, and Manning shows the high potency of some fish oils in vitamins A and D, surpassing that of cod liver oil. Truesdail and Boynton found salmon oils held in refrigeration for a considerable period of time less potent as a source of vitamin A. The use of arsenical sprays on oranges has been found materially to lower their vitamin C content, as well as to reduce their total acidity. Action taken at the June meeting of the Health Committee of the League of Nations to consider international standards for vitamins will undoubtedly have a profound influence on

future vitamin studies. The report of the committee is not yet available, but if international standards are adopted uniform interpretation of quantitative vitamin determinations is assured.

FRUIT PRODUCTS

A new method for the enzymic clarification of unfermented apple juice has been developed at the New York Agricultural Experiment Station. It is a cold process and makes use of enzymes extracted from certain mold cultures which digest the pectin material and break up the colloidal condition of the apple juice. The method has also been applied to grape juice. A method of preventing beverage spoilage by pre-fermentation has been developed by Owen in which certain microbial growth-stimulating substances are removed from the beverages by fermentation before the bottling process. Extensive studies have been made on the effects of quick freezing of citrus fruit juices and other fruit products.

LIGNIN

Wacek has reported that when lignin is heated with sodium ethylate under pressure an oil is obtained which when oxidized with KMnO_4

yields 3, 5—dimethoxy benzoic acid. This is the first time that a lignin degradation product has been obtained having substituents in the 1, 3 and 5 positions. Phillips has published a tentative proposal of a new formula showing the structure of lignin.

PUBLICATIONS

New books of general interest to agricultural chemists are Chamot and Mason's *Handbook of Chemical Microscopy*, in two volumes; a new English edition of Pregl's *Quantitative Organic Microanalysis*; a new and practically rewritten edition of Wiley's *Principles and Practice of Agricultural Analysis*, Volume II, *Fertilizers and Insecticides*; and a third edition of *Official and Tentative Methods of Analysis of the Association of Official Agricultural Chemists*.

Of more specialized interest are the three American Chemical Society monographs, including the second and almost entirely rewritten edition of Sherman and Smith's *The Vitamins*, Chittenden's *Development of Physiological Chemistry in the United States*, and Levene and Bass' *Nucleic Acids*. Kolthoff's *Colorimetric and Potentiometric Determination of pH* is also worthy of mention here.

ELECTROCHEMISTRY

By COLIN G. FINK

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EFFECT OF THE ECONOMIC DEPRESSION

Copper Industry.—Like many other industries, the American electrochemical industry was much affected by the universal business depression. Among those most concerned were the electrolytic copper and zinc industries. The opening-up of extensive copper refineries in Canada (at Port Colborne, Sudbury and Montreal), Belgium (Hoboken), England and Tasmania, will postpone for many months the recovery of the copper industry of the United States which,

in the past, has furnished 60 per cent and more of the world's consumption. On the other hand, there is no doubt that the electrical and automotive industries will continue to grow and prosper. Since these are the two chief consumers of copper metal, the world's present oversupply should soon be exhausted.

Electrochemical Power.—The development of power for electrochemical industries has progressed in spite of the business depression. A notable event is the start of the work during 1930 on the Hoover (or Boulder)

Dam across the Colorado River. An ever-increasing supply of natural gas from the oil wells has presented to the hydroelectric engineer serious competition in motive power. A number of western utility corporations are now planning the use of gas-electric in place of hydroelectric power.

ELECTRIC FURNACES

The high frequency induction furnace of Dr. E. F. Northrup of Princeton, N. J., has gotten a very solid foothold in the steel plant, an event which many of our best engineers would have considered only a few years ago as most improbable, if not impossible. But induction furnaces of several-ton capacity have been installed and are giving surprisingly good results. A wide variety of products has been turned out. Of special interest are the high-chromium and high-tungsten steels. The cast ingots are exceptionally uniform in composition throughout and free from all deleterious impurities. An improved Söderberg electrode for electric furnaces has been successfully operated in calcium carbide furnaces. The electrode is of the continuous-feed type, but the cross section is such that, say for a three-phase furnace, the three electrodes almost completely fill the bowl of the furnace. Each electrode is of oblong cross section.

FUSED ELECTROLYTES

New and important uses for *aluminum* are being added to the already long list. The rapidly spreading use of aluminum in street car and railroad car construction is of special importance. Other new uses of interest are: woven fence wire, barbed wire, window screening, shingles and roofing sheet, spandrels, grilles, balustrades, etc. The flash of the photo-flash lamp is due to the instantaneous oxidation of thin aluminum foil. The world's output of aluminum metal is now five times as large as that of nickel, and almost twice that of tin.

MAGNESIUM

Very gratifying advances in the art of manufacturing and fabricating magnesium have been made. It is now possible to make mechanically strong, welded joints in magnesium products. Both electric and oxy-acetylene welding methods are applicable. The Dow Chemical Company of Midland, Mich., is the sole American producer of magnesium metal. Most of the metal produced is used as a scavenger for oxygen and sulfur just previous to casting nickel, nickel alloys and other metals. There has been a marked increase in the consumption of magnesium metal and magnesium-rich alloys in aeroplane parts including propellers, fuel tanks, ribs and furniture. One of the commonest magnesium-aluminum alloys now used contains about 7 per cent aluminum and 3/10 per cent manganese.

AQUEOUS ELECTROLYTES

As noted above, electrolytic copper, as well as electrolytic zinc and silver, suffered badly during the period of depression. On the other hand, the electroplating industry recorded progress. Of special interest is the rapidly increasing application of electro-galvanizing and electro-coppering of sheet steel and steel strip. Steel is our basic structural material. Its mechanical properties, such as high tensile strength, together with its low first cost, place steel in a class by itself. The competition between ordinary carbon steels, to which a corrosion-resistant surface has been applied, and the so-called alloy steels, notably the high-chromium steels, is today keener than ever. Fabricated steel products with a protective coating of chromium, zinc, cadmium or copper, are for many purposes better and cheaper than the corresponding alloy steel products. The mechanical specifications are readily met and duplication of results is likewise not difficult. This competition between the two products has further stimulated the development of improved and cheaper methods for the electric furnace production of the

various ferro-alloys, notably, ferro-chromium and ferro-tungsten.

CONCLUSION

Although the year has meant much hardship to the electrochemical industry as a whole, the plans for fu-

ture development, not only in this country, but abroad in Russia, France, Germany, England and elsewhere, point toward an ever-increasingly dominating position of the electrical methods as applied to chemistry and metallurgy.

INDUSTRIAL CHEMISTRY AND CHEMICAL ENGINEERING

BY SIDNEY D. KIRKPATRICK

EDITOR, *Chemical and Metallurgical Engineering*

INTER-COMMODITY—INTER-PROCESS COMPETITION

Synthetic Methanol.—Intensely active, almost disastrous, competition characterized the opening months of 1931 in the chemical industry. A battle of commodities had resulted very largely from the rapid and often uncoordinated development of new products and processes. In the case of the alcohol industry this inter-commodity competition centered largely around the dramatic entry of synthetic methanol as a contestant for the anti-freeze market, which is the largest outlet for denatured ethyl alcohol. The newer product, synthesized from by-product gases in three American plants, became available in sufficiently large quantities and at a sufficiently low price to make it a serious contender. It is estimated that it captured at least one-fourth of the business and resulted in a fifty per cent reduction in alcohol prices.

Alkali manufacture was another long-established industry to suffer the disastrous effects of a price war. Soda ash, caustic soda and chlorine are staples not to be easily displaced by substitutes or rival commodities. For some purposes, however, lime and synthetic ammonia offer cheaper or more convenient forms of alkali, and early in 1931 they presented a threat that started a battle which eventually resulted in an almost complete breakdown of the alkali price structure. It is estimated that this cost the industry at least \$15,000,000 in 1931 profits.

Sulphur and Pyrites.—Other of these inter-commodity and inter-pro-

cess conflicts in chemical industry included the revival of the old struggle between sulphur and pyrites, incited this time by the development in Canada of a new flash roasting process in which pyrites is burned under boilers in much the same manner as powdered coal, except that the sulphur dioxide in the products of combustion is utilized for sulphite or sulphuric acid production.

Chemical Profits.—Despite these examples of unusual competition, profits in chemical industry showed a recession substantially less than that experienced by most industrial lines. Standard Statistics reported that the combined profits of chemical companies during the first half of 1931 were only 32 per cent below those for the corresponding period of 1930, as compared with the decline of about 52 per cent in total industrial earnings. Preliminary estimates for the full year were 25 per cent under 1930, again considerably less than the average for all industries. To what does the industry owe this remarkable resistance to depression? It lies largely in its diversity of products, supplemented by an inherent flexibility in its manufacturing processes. Where in 1925-30, rayon and the new pyroxylin lacquers and plastics were the principal sources of chemical dividends, 1931 saw the ascendancy of cellophane, ethyl gasoline and dyestuffs to reach these favored positions. The close relation of the research laboratory to the chemical engineering development of large-scale manufacturing processes

also gives the industry exceptional recuperative powers which should redound to its advantage when any improvement appears in general business conditions.

NEW CHEMICAL ENGINEERING EQUIPMENT

The Thirteenth National Exposition of Chemical Industries, held in New York May 4-9, 1931, revealed in a dramatic way the substantial progress chemical engineering has made since the exhibition two years before. More than a hundred specific examples of new products and equipment were to be noted by the careful observer. A number of these were improved materials of construction for chemical engineering application, such as the so-called "ply metals," in which steel or some strong alloy is covered with a thin layer of corrosion or abrasion resistant metal. This product had its origin a few years ago in Al-Clad in which a layer of chemically pure aluminum was used to surface the stronger aluminum-silicon alloys. Now pure nickel, and the nickel-chromium alloys, such as the stainless steels, are being used in ply metals at a great reduction in cost and often with improvement in the physical and fabricating properties of the resulting products.

A new self-vulcanizing rubber compound was shown to be suitable for direct application to metal, so that it might, therefore, serve as a lining to protect process equipment from corrosion or abrasion. Much interest was attracted by new temperature and acid-resistant paints consisting of powdered aluminum in a bituminous base. The recent trend toward automatic control and mechanization of chemical industry has resulted in the development of a wide variety of new precision instruments. Automatic gas analyzers, temperature stabilizers and photo-electric cell units for color and light determination were exhibited. Other newly developed chemical engineering equipment included turbine-driven spray dryers, evaporators, heat exchangers, glass and glass-lined proc-

ess apparatus, stoneware and clarifying, thickening and vacuum filters.

WASTE DISPOSAL AND BY-PRODUCT RECOVERY

Perhaps a concomitant of the depression was the increased interest on the part of the chemical engineer in the recovery and utilization of materials formerly wasted. To be sure this interest was stimulated by the increasingly severe regulations of the local, state and Federal governments enacted for the prevention of stream and atmospheric pollution. As a result of this agitation, many chemical industries installed plants for the treatment of trade wastes, usually by a combination of coagulation, sedimentation and filtration processes. Among the more serious offenders in connection with stream pollution have been the tanneries, textile-dyeing plants, packing houses, starch works, and by-product coke ovens. In all of these industries the chemical engineer has made notable progress and thereby contributed an important public service in the solving of these difficult problems.

PLATINUM ^{VS.} VANADIUM BATTLE

Vanadium catalysts introduced six years ago into sulphuric acid production by the contact method has continued to gain acceptance; during 1931 three manufacturers specialized in supplying this catalytic mass in the United States. The silica gel platinum catalyst was improved, according to report, to a point where 97 per cent conversion is readily attainable. Proponents of the platinum catalyst have only recently awakened to the vanadium threat and have marshalled facts and figures that promise to start a battle royal within the ranks of contact plant partisans. Meanwhile chamber plant operation in this country continues undisturbed by radical changes although developments in Europe with packed tower systems and water cooled chambers fed with centrifugally dispersed acids are of a nature to suggest that the future of acid plant building here may not be limited to the contact process.

Trends in sulphuric acid raw materials point in several directions. Reference has already been made to the Freeman method for the flash roasting of pyrites fines which, it is believed, may improve the competitive position of pyrites. Research on the recovery of pyrites from high sulphur coal has shown that this source may eventually furnish raw material for much acid. Other research on the recovery of sulphuric acid from power plant flue gases may sometime contribute to the situation, and in the meanwhile by-product acid from smelters is on the increase. Nothing so far developed, however, seriously threatened to rob brimstone of its dominant position in supplying cheap raw material for acid and sulphite manufacture.

RAYON AND CELLOPHANE

In 1931 rayon entered a period of profitless prosperity with production very materially in advance of 1930. *Textile World* estimates the United States output of all grades to have been in excess of 160,000,000 lbs. as compared with 119,000,000 lbs. in 1930. However, prices in all lines dropped precipitously in February, the figure for the most common grade falling to 75 cents per lb. as compared with an average of \$1.10 during 1930. World output was estimated at 431,000,000 lbs. as compared with 417,000,000 lbs. in 1930.

Technically, the year showed very little that was startling. Opening of one new acetate rayon plant marks the further spread of this process. A new simplified cuprammonium process has been put into operation, very greatly shortening the processing time and lowering the cost of cuprammonium silk. The trend toward fine filaments has continued in all branches of the industry, as well as the effort toward improved recovery and greater operating economies.

Cellulose and cellulose ester wrapping films have continued the remarkable advances evident within the last two years. The moisture-proof grades have become increasingly important, particularly on account of the wide-

spread use of these materials in cigarette packaging. Estimates indicate a total production of all goods approaching 90,000,000 lbs. Coincident with this increased output were substantial reductions in price. Within the year two large producers of acetate wrapping film entered commercial production, supplementing the output of the one producer previously making this material.

PROGRESS IN PLASTICS

The principal effect of the slow business year on the plastics industry was to delay the accelerated strides previously predicted for it. Nevertheless several technical and market developments were sufficiently important to keep the picture from being one of uniform retrenchment.

While phenolic resins were no doubt produced in considerably decreased quantities, measured by 30,000,000 lbs. in 1930, further displacement of other materials was of immediate assistance. Bottle-caps and large containers, such as boxes, proved attractive as an increased outlet for plastics. Competition here, of course, is principally with the metal cap and with boxes of wood or fibre. A large glass manufacturer cooperated in the production of bottles designed for resin caps. Meanwhile radio-tube and automobile consumption of resin, which was rather dormant during 1931, was offset to some extent by the widespread adoption of resin base varnishes.

Phonograph records became a more important outlet for resins in 1931. The firm that had made such quantities of low-priced records in the past, was reorganized after financial difficulties early in the year and later succeeded in greatly expanding its outlet in this market. It is the world's largest consumer of resorcinol. Meanwhile the newly announced, long-playing record resulted in a larger contract for vinyl resin, a product that is just emerging from the research laboratory.

Several new producers are continuing to find places for their products, including the urea-formaldehyde res-

in, styrol plastic, and cast phenolic resin. The leading proponent of the latter type boasted of profitable production for the first time in 1931.

NEW PETROLEUM TECHNOLOGY

Hydrocarbon Gases.—In a year characterized by relatively few outstanding engineering developments in petroleum refining, there was marked progress in the commercial production and utilization of the liquefied hydrocarbon gases, principally butane and propane, both of which were largely wasted a few years ago. According to the Department of Commerce, the marketed production of these gases increased from 222,641 gals. in 1922 to 9,930,964 gals. in 1929 and to 18,017,347 gals. in 1930. Preliminary estimates show a greatly increased production in 1931. Butane and propane are sold in cylinders for domestic use in homes not reached by gas mains. Whole communities are also served by special distribution systems. Industrial uses are largely confined at present to heat treating of metals, forging, carburizing and the generation of power with gas-fueled engines. These new products are also proving their worth as adjuncts to gas manufacture.

Synthetic Lubricating Oils.—During 1931 a commercial process was developed for the production of synthetic lubricating oils made by the polymerization of olefins with aluminum chloride. The resulting product has the desirable property of maintaining its viscosity at widely varying temperatures and important uses are developing for it, for example, in the lubrication of automobile transmissions, steering gears, and shock absorbers. Because manufacture by synthesis naturally entails a high cost, it has not yet been possible to produce an economical motor oil for crank-case lubrication.

Hydrogenation of petroleum products, announced in 1930 as a revolutionary advance in refining technique, made considerable progress as a result of some nine months of large scale operation in 1931. It dem-

onstrated its value under existing economic conditions primarily as an extremely flexible tool for the production of materials difficult or impossible to obtain with other equipment. Thus it was used to make a new aviation fuel of much higher flash point than any previously produced commercially. It has also made possible important improvements in lubricating oil manufacture.

Research.—The research of Midgley and Henne in developing dichlorodifluoromethane as a non-toxic, non-inflammable refrigerant found its commercial reflection during 1931 in the formation of a manufacturing company that completed a plant and began large scale production.

FOREIGN TRADE AND PRICE TRENDS IN CHEMICALS

Distribution of chemicals during the year showed an erratic trend with sharp declines in consuming demand from some industries while other industries bought but little less than their 1930 quotas. Consumption of chemicals in the textile, rayon and soap industries increased over that for the preceding year, and it is probable that chemical consumption as a whole declined only about 15 per cent during 1931. Foreign trade in chemicals and related products reflected the decline in general industrial operations. Exports recorded a drop from 1930 of approximately 21 per cent in valuation and imports on the same basis declined about 26 per cent. As prices in primary markets were lower than in the preceding year, it is evident that the decline in tonnage in both outgoing and incoming shipments, was less than that reported for values. Contract prices for chemicals for 1931 delivery with but few exceptions were lower than those in effect in 1930 business. Values in the spot market showed a declining trend throughout the year and the weighted index of prices compiled by *Chemical and Metallurgical Engineering* established an average price level of approximately 8¾ per cent below that of 1930.

XXI. CHEMISTRY AND PHYSICS

PHYSICS

By F. G. TUCKER

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"NUCLEAR" PHYSICS

The year 1931 was notable for discoveries in the field of "nuclear" physics. In 1911 Rutherford, from a study of the scattering of alpha particles, was led to the conclusion that in the atom was a central core or nucleus, positively charged and less than 10-12 centimeters in diameter. Indirect evidence, however, indicated that this tiny nucleus consisted of a complex structure, but on account of the shielding effect of the extra nuclear cloud of electrons it was extremely difficult to probe the nucleus itself. Again it was Rutherford who made the first advance in showing that nitrogen, bombarded with high speed alpha particles emitted rapid protons, or hydrogen nuclei. This discovery, in addition to the evidence obtained from the study of the particles emitted during radioactive transformations, indicated that the nuclei of the heavier elements consisted of a complex assemblage of electrons, protons and alpha particles. The investigation of the laws governing this assemblage is now engaging the attention of many eminent physicists, both experimental and theoretical.

Guided by optical and x-ray spectra, the assumption of nuclear energy levels appears to be the natural method of attacking the problem. Furthermore, the known facts concerning gamma ray spectra give definite support to this hypothesis. On the other hand, the earlier work upon the ranges of alpha particles had not indicated the existence of different groups, coming from different discrete energy levels in the radioactive nucleus. During the past two years the velocities of alpha particles emitted by various active elements have been carefully analyzed in Paris and in the Cavendish Laboratory at Cambridge, England. The most direct method of determining the velocities of alpha particles is by measuring

their deflection in a magnetic field. This method, however, does not possess a high resolving power except in the case where the particles describe a semi-circle before striking the photographic plate. Previous to 1929 no existing electro-magnet would produce a field of the requisite intensity and dimensions to permit the use of this method in studying the velocity of alpha particles. This difficulty was removed upon the completion of the large magnet of *l'Academie des Sciences* in Paris. Rosenblum has used this magnet to investigate the alpha particles of thorium C and actinium C. With a field intensity of 24,000 gauss over a circular area 35 cms. in diameter beautiful magnetic spectra were obtained (*Jour. de Physique* 2, 309, 1931). In the case of thorium C the photographs show four distinct groups of alpha particles whose velocities differ from that of the main group. The ratios of the respective velocities to that of the principal group are 1.0034, 0.975, 0.962 and 0.964. For actinium C one subsidiary group was found and actinium C' gave only the single principal group. In the Cavendish Laboratory the ranges of the particles have been determined with a recording Geiger counter. Since this method records individual particles it has the advantage of great sensitivity and the disadvantage of being disturbed by the gamma radiation; but by proper design of the ionization chamber the disturbing effects were eliminated and the results of Rosenblum were verified. Rutherford, Ward and Lewis (*Proc. Roy. Soc. A*, 131, 684) have measured the long range alpha particles emitted by radium C and were able to identify nine subsidiary groups.

ARTIFICIAL DISINTEGRATION OF LIGHT ELEMENTS

Since Rutherford's original transmutation of nitrogen in 1919, exten-

sive experiments have been made upon other elements. Of the first nineteen elements in the periodic table all except the first four and carbon and oxygen have emitted protons when bombarded with rapid alpha particles. A detailed study of the speeds of the emitted protons was not made until recently. Pose (*Zeit. fur Physik*, 67, 194) and Chadwick, Constable and Pollard (*Proc. Roy. Soc. A*, 130, 463) at Cambridge have shown that protons ejected from aluminum and from fluorine consist of several distinct velocity groups. These velocities are expressed in terms of the "range" of the particles, *i.e.* the distance the particle will travel in air at normal temperature and pressure. In the case of aluminum the ranges of the emitted protons are found to be 29, 47.5 and 58 centimeters. All protons belonging to the long range groups appear to have the same speed. A remarkable feature of Pose's work is that the long range protons were not emitted during the bombardment with the fastest alpha particles; but when the speed of the alpha particles was reduced to a certain definite value the long range protons appeared. This unexpected result, if substantiated by further experiments, would indicate the existence of a sort of resonance effect in the interaction of the colliding particles. It should be added, however, that in a preliminary announcement, Professor L. Meitner of Berlin states that results being obtained in her laboratory do not indicate the existence of this resonance effect. The groups of protons obtained from fluorine under bombardment, are similar to those of aluminum. Pose (*Zeit. fur Physik*, 72, 528) reports three groups with ranges of 15, 20 and 31 centimeters. The first group is continuous, showing all ranges up to the maximum, while the other groups consist of protons of equal speeds.

ARTIFICIAL GAMMA RADIATION

Bothe and his collaborators have shown that certain light elements

emit weak gamma radiations when bombarded with alpha particles. The effect is most pronounced in those light elements which do not emit protons, and is especially prominent in the case of beryllium. The absorption coefficient of the artificial gamma rays emitted by this element has been approximately determined by Bothe and Becker (*Naturwissenschaften* 19, 753). Assuming the validity of the Klein-Nishina formula for absorption, the wave-length of the radiation was calculated to be between 0.55 and 1.35 X units (10-11 cms.). The energy of a quantum of radiation of this wave-length is between 9 and 20 million electron-volts, and since the energy of the bombarding particle is definitely less than this value, the emitted radiation must be due to the capture of the alpha particle. Such a capture must result in the formation of a nucleus of mass 13, with a positive charge six times as great as that carried by a proton. This atom is known as carbon (13), which is an isotope of ordinary carbon, and there is spectroscopic evidence that such atoms exist in nature. The hypothesis that the colliding alpha particle is captured by the nucleus has direct experimental support in Blackett's photographs of disintegration tracks in nitrogen.

QUANTUM THEORY OF NUCLEAR PROCESSES

Considerable success has been attained in the interpretation of these experiments on the basis of wave-mechanics. According to the theory of Gamow, when an inelastic collision of alpha particle and nucleus occurs the particle transmits a fraction of its energy to the nucleus. This transfer of energy may produce either of two effects: (1) the nucleus may be thrown into an excited state with a subsequent return to a state of lower energy accompanied by the emission of gamma radiation; or (2) the encounter may result in the ejection of a proton, and therefore the formation of the nucleus of another element. Evidence for believing that

the alpha particle is captured in encounters of type (1) has been given. In the case of encounters of type (2) Gamow assumes that the collision may or may not result in the capture of the particle. The continuous band spectrum of ejected protons is attributed to collisions without capture, while the long range groups are attributed to encounters with capture. The observed fine structure in the ranges of alpha particles is interpreted in the following manner. Consider two alpha particles "A" and "B" in the ground level of a thorium C nucleus. Particle "A" is ejected and due to the interaction between the two, "B" is raised to a higher energy level, with a consequent decrease in the velocity of emission of "A". After the escape of "A" the nucleus is that of thorium C" in an excited state, since "B" is not in the ground or lowest energy level. The return of "B" to a lower level will result in the emission of gamma radiation. According to this view the alpha particle spectrum of thorium C should correlate with the gamma ray spectrum of thorium C" and such correlation is actually found. It appears, therefore, that the present quantum mechanics can be applied to alpha particles and to protons in the nucleus with considerable success. It is the opinion of Bohr, however, that the problems raised by the nuclear electrons are entirely outside its scope; and fundamental modifications will have to be made before these problems can be treated. One of the difficulties raised by the nuclear electrons is that it forces us to the conclusion that the concept of energy and its conservation has no meaning and cannot be applied to those processes involving the emission or absorption of electrons by the nucleus.

HIGH SPEED ELECTRONS AND IONS

At the present time the physicist is seriously handicapped in his study of nuclear problems because the only projectiles which are available for

probing the innermost core of the atom are alpha particles emitted from radioactive matter. These particles possess the requisite energy, but the number of particles available is small and their maximum energy is definitely limited. If methods were available for producing particles, in large numbers with energies equal to or greater than that possessed by the alpha particle, we should anticipate results of far-reaching importance. Considerable progress has been made in the development of apparatus for this purpose. The preliminary results of Brasche and Lange, at the University of Berlin were reported in the 1930 AMERICAN YEAR BOOK. They have continued their work and report the production of x-rays with a tube operating at 2,000,000 volts and hydrogen canal rays at 900,000 volts. The most interesting features of their work, however, is the new type of x-ray tube which was built up of alternate flat rings of aluminum, paper and rubber, (*Zeit. fur Physik*, 70, 1931). A tube of this type 84 centimeters long operated successfully at 2,400,000 volts.

A new type of high voltage generator has been described by Dr. R. J. Van de Graaff of Princeton University. (*Physical Review* 38, 1919). The generator is composed of two units, each consisting of a 24-inch hollow copper sphere mounted upon a 7-foot upright Pyrex glass rod. Each sphere is charged, one positively and the other negatively, by a motor-driven silk belt running between the interior of the sphere and the base. The ascending surface of the belt is charged near the base by a brush discharge maintained by a transformer kenetron set, and is subsequently discharged by points inside the sphere. This particular apparatus gave a difference of potential between the spheres of approximately 1,500,000 volts and the only apparent limiting factor was the brush discharge from the surface of the spheres. It is estimated that potentials as high as 10,000,000 volts will be obtained with a larger generator now under construction.

Lawrence and Livingston (*Physical Review* 38, 834) at the University of California have developed a novel method of producing high speed ions or protons without the use of high voltages. The ions are set in resonance with a high frequency oscillating voltage between two hollow semi-circular plates. A transverse magnetic field causes the ions to move in semi-circular paths and each time an ion passes from the interior of one plate to that of the other, it gains energy corresponding to the voltage across the plates. In this manner the actual speeds of the ions correspond to voltages approximately one hundred times the oscillating voltage applied to the plates. With the present apparatus 1,100,000-volt protons have been generated in sufficient quantities to give currents of about 10-9 ampere.

COSMIC RAYS

One of the most baffling problems of physics is the question of the nature of the ultra-penetrating radiation generally known as "cosmic rays". Do they consist of electromagnetic waves of extremely short wave length, *i.e.* photons of enormous energy, of electrons with speeds comparable to the velocity of light, or of high speed material particles? Each of these alternatives has authoritative support. At the present time evidence concerning the nature of these rays is obtained by three methods: first, absorption measurements in deep lakes and at high altitudes enable one to calculate the absorption coefficients which in turn yield an estimate of the radiation quantum if one assumes the validity of the Klein-Nishina absorption formula; second, coincidence measurements with recording electron counters give information concerning the high speed particles which are associated, if not identical with, the penetrating rays; third, the deviation produced by strong magnetic fields and the effects produced at the boundary of two media may be studied with the use of electron counters.

During the past year important contributions were made by all methods. Millikan and Cameron (*Physical Review* 37, 235) verified and extended their cosmic ray ionization depth curve. They obtained absorption coefficients which vary from 0.35 per meter of water at the top of Pikes Peak to 0.028 at a depth of 262 feet of water. Their ionization depth curve is interpreted as indicating the existence of four definite absorption bands with coefficients 0.35; 0.10; 0.20 and 0.80 per meter of water respectively. Observations taken at latitudes 34 degrees north and 59 degrees north, gave the same ionization depth curve, which indicates that the rays enter the earth's atmosphere as electromagnetic waves since charged particle would be deviated by the earth's magnetic field.

Regener (*Elek. Nachr. Technik* 7, 451) has made important absorption measurements in Lake Constance, obtaining observations at depths as great as 236 meters. In the first experiments a pressure ionization chamber was used, and these results were checked later with a recording electron counter. The absorption coefficient of the most penetrating component of the cosmic radiation was found to be 0.020 per meter of water, or only two thirds of the value assigned by Millikan to his most penetrating band.

If the cosmic rays are electrons with energies of the order of magnitude of 1,000 million electron-volts, it should be possible to deflect the rays with a very intense magnetic field. Mott-Smith in America and Rossi in Italy have made a careful study of this question. Both investigators report negative results, although the apparatus of Mott-Smith was sufficiently sensitive to detect the deflection of electrons with velocities corresponding to 2,000 million volts. This seems to be serious evidence against the particle hypothesis. On the other hand recent results of Mott-Smith and Locher present a difficult problem for the advocates of the photon theory. In their ex-

periments, electron counters were combined with a Wilson cloud expansion apparatus in such a manner that the cosmic ray particles (or photons) could be studied simultaneously by two methods. A considerable number of counter discharges were accompanied by ion tracks resembling those produced by very fast beta particles, but somewhat thinner. The number of ions per centimeter length of path appeared to be about half of the value observed for recoil beta particles from radium C gamma rays. No satisfactory explanation of these results has been given.

Another interesting experimental fact has been reported by H. Geiger, of Tubingen, who developed the remarkable electron counter which plays such an important role in modern research. A counter was shielded by five centimeters of lead and an equal thickness of aluminum. When the aluminum was facing the counter five per cent more electrons were recorded than when the lead was facing it. Since the total absorption of the two screens was the same in both cases the increase in ionization must be due to fast secondary electrons. These electrons were able to penetrate approximately four cms. of aluminum.

SPECULATIONS ON THE ORIGIN OF COSMIC RAYS

The problem of the origin of the cosmic rays is one of great interest and numerous hypotheses have been suggested. The one proposed by Millikan has many attractive features. Assuming the validity of the Klein-Nishina formula, Millikan calculates the energy of a cosmic ray photon and compares this value with the amounts of energy set free in the building of atomic nuclei from the component protons and electrons. The building energies are calculated from Einstein's equation $\Delta E = c^2 \Delta M$ where ΔE represents the change in the energy of the system, ΔM the change in mass due to any rearrangement and " c " the velocity of light.

The values of ΔM , known as the mass defect, for the various atoms have been accurately measured by Aston. The comparison of the photon energies and building energies lead to the conclusion that the four cosmic ray bands are due to the building in interstellar space of the nuclei of helium, oxygen, silicon and iron. This interpretation, however, will not account for Regener's results, and to explain them Jeans has suggested that alpha particles disappear into radiation.

Mott-Smith and Geiger favor the hypothesis of very high speed particles, possibly protons, while Pauli has suggested the possibility of an entirely new type of particle called a "neutron". As the name indicates, this particle carries no electric charge, and would, therefore, suffer no deflection in a magnetic field. It is evident that more detailed and consistent experimental results must be obtained before an adequate theory of the origin of these rays can be evolved.

DYNAMIC NATURE OF ATOMS

Dumond and Kirkpatrick (*Physical Review* 38, 1894) have shown that when x-rays are scattered by graphite, the so-called Compton line is not sharp, but broad and diffuse. According to the theory of the Compton effect we should anticipate such a broadening, if the electrons responsible for the scattering were moving with high velocities when they experienced the encounter with the x-ray photon. The importance of this result is that it furnishes the first direct experimental evidence for the motion of the extra nuclear electrons, as originally postulated by Bohr. There seems to be an impression in some quarters that in the new quantum theory the atom has become "static" and, therefore, this result would be inconsistent with the wave-mechanics. Such is not the case, however, for the electronic motion is still present but disguised with the name of "momentum eigenfunktion."

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

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(For further information, the reader may address the following organizations)

AMERICAN CHEMICAL SOCIETY, Mills Bldg., Washington, D. C.	AMERICAN SOCIETY OF CHEMICAL ENGINEERS.
AMERICAN ELECTROCHEMICAL SOCIETY, Columbia University, N. Y. C.	ASSOCIATION OF OFFICIAL AGRICULTURAL CHEMISTS, Washington, D. C.
AMERICAN LEATHER CHEMISTS' ASSN., 143 W. 20th St., New York City.	COPPER AND BRASS RESEARCH ASSN., 25 Broadway, New York City.
AMERICAN MICROSCOPICAL SOCIETY, University of Illinois, Urbana, Ill.	NATIONAL RESEARCH COUNCIL, 29 W. 39th St., New York City.
AMERICAN PHYSICAL SOCIETY, Columbia University, New York City.	SOCIETY OF CHEMICAL INDUSTRY, Pratt Institute, Brooklyn, N. Y.
AMERICAN SOCIETY OF BIOLOGICAL CHEMISTS, Columbia University, New York City.	SYNTHETIC ORGANIC CHEMICAL MANUFACTURERS ASSN., 1 Madison Ave., New York City.

DIVISION XXII

BIOLOGICAL SCIENCES

ORGANIC EVOLUTION

By G. KINGSLEY NOBLE

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PRESENT TENDENCIES

Probably sufficient data have been accumulated to present a truthful picture of the process of organic evolution. Geneticists such as Sewall Wright (1931 *Genetics* XVI: 97-159) are examining these data and analyzing them mathematically. Single species are made up of individuals, no two of which are alike. The heritable differences are due to factors which segregate and assort in Mendelian fashion. The symmetry of this mechanism gives a certain constancy to large populations of a single species. Naturalists have long known that isolation is a very potent factor in species formation. From these analyses the reason for this would appear to be that isolating a sample of a population upsets the balance and leads to an indefinitely continuing, irreversible, adaptive, and much more rapid evolution of species. Opponents of Darwinism have pointed out that natural selection would not account for the small beginnings of structures which only become functional when fully elaborated. The data at hand when treated mathematically indicates that new species would at first differ in non-adaptive respects. This eventually would lead to adaptive radiation as well as to parallel orthogenetic lines in accordance with the conditions. There is therefore complete agreement between Mendelian evolution of geneticists and speciation of naturalists.

THE RATE OF EVOLUTION

The proceedings of the 7th International Ornithological Congress appeared this year. Alexander Wetmore points out that the majority of Pleistocene birds from Florida are species still living in that state today. This is evidence for the slowness of evolution in birds. Palaeontologists considering the Pleistocene birds and mammals of California had previously found many living species. Thanks to the fossil record the age of many of the major groups of animals and plants is known. This year R. J. Tillyard described in the *American Journal of Science* a new order of insects, *Protelytroptera* from the Permian of Kansas. It is believed that the *Dermoptera*, or earwigs, have been derived from this group.

HYBRIDIZATION IN SPECIES FORMATION

Many species of plants have arisen by crossing. This hybrid origin is often revealed by the form or arrangement of the chromosomes in the cells. In the first botanical volume of the Journal of the Hiroshima University appearing in 1931 two cases are discussed in detail. The ancestral *Potentilla* were apparently diploid species with circumpolar distribution in the Tertiary. They later moved south, intercrossed and gave rise to various polyploid species and groups.

ENVIRONMENT IN SPECIES FORMATION

Attention should be called to Pro-

VERTEBRATE ZOOLOGY

fessor E. B. Poulton's presidential address before the British Association for the Advancement of Science. In this he presents unequivocal evidence of the importance of natural selection in the production of mimics. H. Lundegardh has produced a volume on the rôle of the environment in plant evolution (English translation by E. Ashby). A. D. Middleton (*Journ. Ecol.* XIX:190) finds that local conditions greatly modify the four-year mole cycle previously reported for Great Britain. K. Kikucki (*Jour. Fac. Sci. Imp. Univ. Tokyo* II: 163) finds that the number and arrangement of the spines in certain species of rotifers may be modified by their food. Although these and many other instances of the molding influence of the environment during a single generation might be cited there is no evidence of such effects being inherited. Nevertheless Agar has recently attacked the old problem of the inheritance of acquired characters by studying the rate of regeneration in certain Crustacea. After repeating the operation for a hundred generations Agar found no improvement in the rate or character of regeneration.

SEXUAL SELECTION

A. H. Miller (*The Condor* XXXIII:32-33) has shown that the

female Jacana leaves the care of the young to her less brightly colored mate. This is a close parallel to the phalaropes and suggests that the gaudy plumage of the female plays some rôle in courtship as well. A. F. J. Portielje has reexamined the courtship of the ruff and has concluded there is no real sexual selection in this classical bird (*Proc. Internat. Ornithological Cong. Amsterdam*, VII, p. 171).

COMPREHENSIVE SURVEYS

M. Caullery has written a comprehensive volume on *Le probleme de l'evolution* (Paris, Payot et cie). It stands in striking contrast to a book published this year by D. Rosa on *L'ologenese: nouvelle theorie de l'evolution et de la distribution geographique des etre vivants* (Paris, Felix Alcan). The latter is a translation into French with many amplifications of a work appearing in Italian in 1918. Rosa holds that in every species of living creature just as in every egg there are a host of determinants which become spent as the species reach maturity. Mother species on reaching maturity are supposed suddenly to give rise to two daughter species. Unfortunately there is no scientific proof of such birth of a species.

VERTEBRATE ZOOLOGY

BY JAMES E. KINDRED

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MORPHOLOGY

Kidneys.—The kidneys of the lower vertebrates and man have been the subjects of several investigations during the year. Nash has shown that glomerular development is much greater in fresh water bony fishes than in those of the sea, but that the conditions in the sharks and hagfishes, usually regarded as primitive vertebrates, are more like those in fresh water fishes than in their marine neighbors. R. A. Moore from a study

of human kidneys states that in the normal kidney from birth to 40 years there are from 800,000 to 1,000,000 *glomeruli*. In old age the number is reduced by about two thirds.

Endocrine Glands.—Most of the investigations on the endocrine glands, including the thyroid, parathyroid, thymus, hypophysis, epiphysis and suprarenal, concern function rather than morphology. Bucy describes a new type of cell from the pars nervosa of the hypophysis of

cattle. He calls this cell the *pitui-cyte* and suggests that it is specific for this organ. Variations in position of the parathyroid glands of man are reported by Millner. According to Jackson, the size of the follicles of the thyroid gland in man average about 163 microns in length. In colloid diseases they increase in size. Myelinated nerve fibers have been traced into the ganglionic masses of the cortex and medulla of the suprarenal glands by Alpert. Postganglionic unmyelinated fibers terminate in the gland cells.

Reproductive System.—Some attention has been focused on the anatomy of the reproductive system most of it with a view to use in experimental study. The details of the changes in the ovary of the mare during pregnancy as described by Cole *et al* include the history of the *corpora lutea*. The relatively slow growth of the follicles in the ovaries of newborn mice culminates with a very rapid change on the 15th, post-natal day, according to Engle. After this time all the new follicles grow fast and reach the same level of development, but all degenerate before the onset of puberty. Hargitt, from study of ovaries of rats, concludes that there can be no question of the origin of new ova during adult life from the germinal *epithelium*. It is commonly known that the right oviduct of the domestic fowl is vestigial in adult life, but McKenney has found two fowls in which it is fully developed. In one of these the anomalous oviduct contained ova.

Studies of the blood by the standard fixation and staining methods and by the newer methods of staining the cells while alive have been made on several vertebrates for the first time. Thus, the detailed description of the blood cells and blood-forming organs of the African lungfish has been given by Jordan and Speidel. The blood cells of this fish are very large and the *leucocytes* are particularly diverse in their cytology. The chief hemopoietic organs are spleen, intestine and kidneys. The spleen is embedded

in the wall of the stomach and in it most of the *erythrocytes* are formed. Modified *lymphocytes* are regarded as the cells probably ancestral to all types of blood cells in this fish. Dawson reports the characteristics of the *erythrocytes* of the catfish as studied by the supravital method. This investigation seeks to demonstrate that there is no fixed globule (the stigma) in the *erythrocyte* such as Nittis described. The erythrocytes contain small globules similar morphologically to stigmata of Nittis, but they circulate freely. The origin of blood-platelets from megakaryocytes in cat spleens has been described by Rothermel. From observations made on lymph nodes, spleen, lungs and omenta of rabbits which have been prepared by a new technique involving injection of neutral red, Forkner concludes that monocytes arise from undifferentiated cells of the *reticulum syncytium*, particularly in peripheral lymph nodes, and that *monocytes* are not derived from *lymphocytes* as many investigators now hold.

CYTOLOGY

A number of studies have been made concerning the detailed anatomy of the cells of the various tissues of the vertebrate body. The pigment granules of liver cells in certain salamanders have been traced by Jordan to materials which have been transported from spleen to liver by *macrophages*. Upon disintegration of the *macrophages* in the liver *sinusoids* the pigment particles are taken up by the endothelial cells and transferred to the liver cells. According to Kater the *mitochondria* of liver cells in cats change shape from filaments to spherules in animals injected with insulin, adrenalin hydrochloride or anesthetized with ether after 24 hours' starvation. The demonstration of abundant mitochondria in *osteoclasts* of the bone marrow is regarded by Chuam as indication of the vital capacity of this type of cell, contrary to the general view that *osteoclasts* are degenerate cells. Dawson has found that filaments reacting

to Janus green are present in the Golgi zone of cartilage cells. Since they react to osmic acid as well they may be interpreted either as Golgi apparatus or mitochondria. Beams, however, from a study of the spinal ganglion cells of the rat suggests that the Golgi apparatus, *filamentous mitochondria*, neutral red bodies, clear canals and Nissl bodies are distinct entities. Nath and Nagia from similar studies on the eggs of teleost fishes conclude that the Golgi apparatus, *mitochondria* and *vacuoles* are independent cell components. Specific granules of a type hitherto not demonstrated have been found by Bloom in some of the cells of islets of Langerhans of the pancreas.

EMBRYOLOGY

Romanoff in experimenting with hen's eggs has found that it is possible to cultivate the embryos in opened eggs. Patten has made a detailed study of the anatomy of the interatrial septum on the heart in fetuses, children and adults. He concludes that the closure of the foramen ovale is a slow process and is concomitant with increase in the pulmonary circulation and decrease in bore of the ductus arteriosus. At the end of the first postnatal month there is a functional closure of the foramen; subsequently, there is rapid growth of connective tissue between the valve and the septum which normally results in complete fusion and anatomic closure of the foramen. The details of the development of the sino-atrial node or stimulus-conducting apparatus in the calf's heart have been described by Rawlinson. This node or mass of primitive cardiac muscle tissue appears when the *sinus venosus* is still a separate chamber of the heart. According to Chang, the interatrial septum of the chick's heart arises from the endocardial cushion and is stimulated to develop by the friction between streams of blood entering the primitive atrium from the right and left sides. The heart beat of *Fundulus* (minnow) embryos starts several days before

there is innervation, according to the observations of Armstrong. The ingrowth of the vagus nerve is followed by regulation of the beat. The development of the pericardium of the rabbit embryo has been traced by Elliott from its origin in the lateral mesodermal masses of the early embryo through its completion and separation from the pleural and peritoneal cavities by growth of the septum transversum. The morphogenesis of the aortic arches of the embryo porcupine has been described by Struthers. In addition to the usual features of aortic arch development common to all mammals, there is present an artery to the primitive jaw which is homologized to a similar artery in reptiles. The questionable transitory fifth arch is present, intimately associated with the sixth arch. Kindred and Corey report counts of red and white blood corpuscles in rat fetuses. There is a direct rise in the red cell count from 694,000 per cu. mm. at the 15.4 mm. stage to 2,000,000 per cu. mm. at birth. The hemoglobin increases during this period, but fluctuates more than the red count. Its fluctuations are correlated with qualitative changes in the corpuscles. The *leucocytes* show great fluctuations during fetal life although they average 600 per cu. mm. in fetuses 15 mm. long and increase to 2000 at birth.

Pankratz, from a study of the *histogenesis* of the suprarenal glands of rat fetuses, suggests that since there is migration of neuroblasts into these organs at the stage when the first fetal movements have been demonstrated by Swenson, a possible relationship exists between movement and degree of development of the suprarenal glands. Observations of the rate of growth of the scala tympani in pig fetuses as compared with the degree of development of the *scalae vestibuli* have led Foley to conclude that there is no evidence for the view that the *scalae vestibuli* are formed as a result of mechanical action, but rather develop in response

to enzymatic stimuli produced by the *epithelium* of the primitive *scala tympani*.

EXPERIMENTAL MORPHOLOGY

Regeneration. — Hellmich has found that the regeneration bud which follows amputation of the limb of adult salamanders is composed of various types of blood cells and undifferentiated mesenchyme cells. Failure of regeneration of new limb buds to replace those amputated from salamander larvae is thought to be due to lack of mesenchyme cells in the region of amputation. Adams removed a large piece of entoderm from the future oral region of *Amblystoma* embryos and found that the number of tooth germs developing in such embryos was never as great as in normal embryos. Using the chorion of the chick as a culture medium, T. E. Hunt implanted on it small pieces of undifferentiated chick blastoderm. Growths resulting from the grafts indicate that the primitive node forms such specialized structures as brain, spinal cord, notochord, eye, heart, liver, metanephros; and such non-specific tissues as cartilage, muscle, gut epithelium and integument; whereas parts of the blastoderm posterior to the node gave rise only to non-specific tissues. Willier and Rawles, studying chick blastoderm transplants in a similar manner, found that heart and liver usually develop together, but although heart may develop alone, liver seldom does. According to Blick, transplantation of the nasal placodes of *Amblystoma* embryos to a position four or five segments caudal to the forelimb, grow into limbs. Schwind transplanted the pectoral girdle from one species of *Amblystoma* embryo to another and found that the transplants did not keep their specificity of form, nor did they interfere with the growth of the host girdle. Twitty and Schwind transplanted the *primordia* of the eyes and limbs from

embryos of *A. punctatum* to *A. tigrinum* and vice versa. Such transplants showed the same rate of growth as their normal controls. Nussman has shown that embryos of *A. punctatum*, from which limb rudiments were removed and optic rudiments substituted, suffered a decrease in the size of the spinal ganglia in the limb region. That the presence of the optic *primordia* in this region did not cause this change is evidenced by decrease in the size of ganglia when limb rudiments were removed, but no optic *primordia* substituted. Humphrey has found by removing the *preprimordium* of one gonad from one *Amblystoma* larva and replacing it with a corresponding *preprimordium* from another of the same stage of development, that an ovary and testis may develop in the same animal. The testis usually differentiates first and the ovary remains inactive unless this testis is removed. Hinrichs and Genter subjected the eggs of *Fundulus* to ultraviolet light and found a higher percentage of double monsters and twins developed from these eggs than from normal ones. Chambers and Harvey exposed fish and frogs to supersonic electric waves. The animals died and death was attributed to *hemolysis* of *erythrocytes* within the gill capillaries and the general traumatic injury to the head region of the body. Gaseous cavities were found in the tissues of the exposed animals. Ibsen and Bushnell report failure of experiments designed to produce heritable eye defects in rabbits. No statistical difference was noted in the number of eye defects appearing in offspring of untreated rabbits injected with lens antibody. Feeding of desiccated thyroid gland daily in minute amounts to pregnant rats is reported by Weichert to have resulted in death, resorption of fetuses or prolonged gestation; in non-pregnant rabbits such feeding modified the oestrous cycle.

INVERTEBRATE ZOOLOGY

INVERTEBRATE ZOOLOGY

By J. A. DAWSON

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PROTOZOA

Morphology.—A new species of chlorophyll-free *Euglena* which is parasitic on the rhabdocoel worm, *Stenostomum* is described by S. R. Hall (*Biol. Bull.*, Vol. 60, No. 3). This species, which is named *Euglena leucops*, possesses no flagellum while living in its host but develops one upon removal. In a striking announcement concerning the anatomy of the genus *Diplodinium* by Chas. W. Reese (*Jour. Morph. and Physiol.*, Vol. 52, No. 1) the author claims that the neuromotor system as earlier described by Sharpe can not be differentiated.

Cytology.—A vacuome (Golgi apparatus) distinguishable in both living and stained specimens is described for *Chlamydomonas* sp. by R. P. Hall and Ross F. Nigrelli (*Jour. Morph. and Physiol.*, Vol. 51).

Genetics.—Mary Stuart MacDougall (*Jour. Exp. Zool.*, Vol. 58) describes another mutation produced in *Chilodon uncinatus* by means of ultra-violet radiation. This mutation, like the one previously reported by this author, is a "tailed" form and is apparently homozygous since it has passed through twenty epidemics of conjugation with no sign of reversion.

Behavior.—Following his extensive work on locomotion in amoeba, S. O. Mast (*Biol. Bull.*, Vol. 61, No. 2) discusses the peculiar type of locomotion found in the shelled rhizopod, *Diffugia pyriformis*. Dr. Mast finds that *Diffugia* may be taken out of its shell whereupon its movement exactly duplicates that of *Amoeba proteus*.

Metabolism and Growth.—Hydrogen-ion concentration has little significance in the life of *Euglena gracilis* according to Gordon Alexander (*Biol. Bull.*, Vol. 61, No. 2) but may be indirectly helpful in acid media by preventing the growth of

competing organisms such as bacteria. *Euglena gracilis* can live in media in which the *pH* varies from 2.3 to 11.0. Disagreeing with almost all previous investigators on the subject, H. Albert Barker and C. V. Taylor state (*Physiol. Zool.*, Vol. 4, No. 4) that the formation of permanent cysts in *Colpoda cucullus* is brought about by crowding of the organisms in the medium, that it is not markedly accelerated or retarded by the presence or abundance of food and that it is not appreciably influenced by the *pH* within the limits of a *pH* of from 6.2 to 8.2. As a result of studies on the intestinal flora of termites with respect to their ability to digest cellulose, Albert Dickman (*Biol. Bull.*, Vol. 61, No. 1) concludes that although cellulose-digesting organisms including both bacteria and molds are abundant in termite nests they probably play very little part in digestion of cellulose so far as the termites are concerned since he was unable to isolate them from the intestines of termites.

Physiology.—C. H. Philpott (*Biol. Bull.*, Vol. 60, No. 1) who has previously reported much concerning the effect of venoms on protozoa concludes that the effect of rattlesnake and cobra venom is general on animals of this group. He finds much variation, however, among various species and notes that several have a high resistance to rattlesnake venom and a low resistance to cobra venom while the reverse is true of others. Continuing his studies on *Didinium nasutum*, C. Dale Beers (*Jour. Exp. Zool.*, Vol. 58) gives evidence to show that while conjugation is ineffective in lines which are adequately fed it may result in increased vitality when the didinia are in a state of decline induced by inadequate cultural conditions.

METAZOA

Morphology and Development.

—A detailed study of the endoderm of *Hydra* by Carl H. McConnell (*Jour. Morph. and Physiol.*, Vol. 52, No. 1) shows that the flagella of endodermal cells originate in the form of a cytoplasmic spherule appearing in the membrane just above the blepharoplast. Endodermal cells are shown to have from one to five flagella. The villi which occur in the endoderm of *Hydra* are found upon study to break down and the resultant free cells are eventually digested by the endoderm of the tentacles and buds. In an extensive study of the development of the polycytenid insect, *Hesperoctenes fumarius*, Harold R. Hagen (*Jour. Morph. and Physiol.*, Vol. 51, No. 1) demonstrates an unusual type of viviparity in which the embryos are nourished by the pleuropodia which form a so-called "pseudoplacenta". This is the second genus of insects in which such a type of development occurs.

The life cycle of a bisexual rotifer, *Lecane inermis*, is shown by Helen M. Miller (*Biol. Bull.*, Vol. 60, No. 3) to involve three types of individuals, the so-called "amictic" or asexual females which reproduce only parthenogenetically, "mictic" or sexual females and males. The asexual females produce more eggs than the sexual females and apparently as a consequence have shorter lives. Ruth Stocking Lynch and Helen B. Smith (*Biol. Bull.*, Vol. 60, No. 1) working on effects of modification of the culture medium on the length of life and fecundity in the rotifer, *Proales sordida*, state that, although these animals become depressed when grown on reduced food supply, the progeny of such depressed animals recover normal fecundity and longevity in one generation when restored to an adequate food supply. This is in striking contrast to the condition generally prevailing in the protozoa. An attempt to explain this contradictory state of affairs is given by the authors. The life cycle, sex differentiation and development of the testis in *Melanoplus differentialis*

is reported by O. E. Nelsen (*Jour. Morph. and Physiol.*, Vol. 51) who has carefully reproduced in the laboratory the conditions under which this insect develops in nature. He shows that the testis is functionally differentiated when the adult condition is reached. The problem of voltinism (number of broods per season) and dormancy in the Polyphemus moth, *Teia polyphemus*, is attacked by Ralph W. Dawson (*Jour. Exp. Zool.*, Vol. 59, No. 1) who shows that although it is almost impossible to bring about artificially the production of two broods in moths accustomed to producing but one brood in a season, dormancy could be induced during the last larval stage by a decline in the temperature provided that such decline lasted for four or five days. H. W. Stunkard and F. W. Dunihue (*Biol. Bull.*, Vol. 60, No. 2) report the occurrence of four species of trematodes from a Long Island duck. Two of these are little known species previously found only in Europe. This finding supplements other data which tend to show that parasitic fauna are being introduced into North America and that exotic species are being established here.

Cytology.—Two contributions to the technique of cytology are announced—the first by F. F. Lucas and Mary B. Stark (*Jour. Morph. and Physiol.*, Vol. 52, No. 1) concerns the development of the ultra-violet microscope by means of which microphotographs of living cells may be made at three or four times the magnifying powers used by the ordinary compound microscope. Due to the shorter length of ultra-violet waves twice the resolving power may be had; furthermore, all the difficulty of embedding and staining is eliminated. The authors demonstrate stages in the maturation of germ cells of the grasshopper. The second contribution by W. J. Baumgartner and M. A. Payne (*Jour. Exp. Zool.*, Vol. 59, No. 3) demonstrates a new technique for study of cellular structures and inclusions in the living cell without the use of vital stains. This consists essentially of a method of

exposing part of an animal, such as an insect, in a specially constructed chamber so that it may be studied under the microscope, the animal meantime is kept living under fairly normal conditions. An investigation into the number of chromosomes in thirty-seven species of Aphididae by Orihay Shinji (*Jour. Morph. and Physiol.*, Vol. 51, No. 2), shows that there is but one sex chromosome in the male cells of all but one species of aphids. It is claimed by the author that the number of chromosomes and the body characters are so closely correlated that we can safely judge the evolutionary scale of any aphid by its number of chromosomes. The spermatogenesis of *Succinea ovalis*, a small terrestrial pulmonate mollusc, is studied by Cleveland P. Hickman (*Jour. Morph. and Physiol.*, Vol. 51, No. 1). The diploid number of chromosomes is forty and the haploid number twenty. The proximal centriole, together with the oxychromatin forms the intranuclear rod, the mitochondria take part in the formation of the sheath around the axial filament of the spermatozoon and a part of the Golgi apparatus, and the acroblast forms the acrosome. J. Bronte Gatenby (*Jour. Exp. Zool.*, Vol. 58) in a preliminary report on the effect of phosphorized olive oil on the spermatogenesis of *Abraxas grossularia* indicates that processes that normally take place in the spermatid cells may be caused to occur in the spermatocytes. The chief effect concerns the Golgi bodies which run together in one part of the cell to form a relatively enormous acroblast. E. Ruffin Jones (*Jour. Morph. and Physiol.*, Vol. 52, No. 1), studying the intranuclear deutoplasm and the origin of the gametes in the Turbellarian, *Prorhynchus applanatus*, calls attention to a new type of yolk elaboration. This occurs within the nucleus through the growth and fusion of nucleoli, the yolk globule becoming larger than the original nucleolus.

Regeneration and Polarity.—N. J. Berrill (*Jour. Exp. Zool.*, Vol. 58) concludes from a study of regenera-

tion in *Sabella pavonina* and other sabellid worms that abdominal segments may be transformed into thoracic segments through the organizing influence of anterior regenerating tissue. This "organizer" exists in the head region apart from any regeneration of missing parts. In *Nereis virens*, according to Gladys E. Holmes (*Jour. Exp. Zool.*, Vol. 60, No. 3), the posterior regeneration of segments is normal only if the ventral nerve cord is present at the cut surface. Exposing cut portions of *Tubularia* to varying concentrations of potassium cyanide at a pH of 7.0 and at varying but relatively short periods of time. C. M. Child (*Physiol. Zool.*, Vol. 4, No. 2) finds that these conditions alter the scale of organization and localization of the various parts to the cut end. Potassium cyanide increases the frequency of regeneration of wholes, i.e., pieces consisting of hydranth and stem. It also alters the polarity of two to three millimeter pieces as it increases the frequency of unipolar rather than bipolar forms. It is suggested that this is due to some degree of differential recovery to temporary exposure to potassium cyanide.

Physiology (Nervous System and Sense Organs).—Dwight E. Minnich, working on the sensitivity of the oral lobes of the proboscis of the blowfly, shows that the outer marginal hairs of these lobes are gustatory and that while the order of effectiveness for stimulation of maltose, glucose and lactose is the same as for the chemoreceptors of the legs, the oral lobes are sensitive to lactose in high concentration while the legs are insensitive. The olfactory sense of the meal worm, *Tenebrio*, has been exhaustively studied by J. Manson Valentine (*Jour. Exp. Zool.*, Vol. 58). This worker finds the olfactory sense is used predominantly by the male in finding the female, that it is located chiefly on the antennae and especially on the last four segments, that food is perceived by the same sense organs which enable the male to find the female and that essential oils have an irritating effect on the

true olfactory organs. The function of the nervous system in regulating the ciliary activity of the lamelli-branch gill is examined by Alfred M. Lucas (*Jour. Morph. and Physiol.*, Vol. 51, No. 1) who believes that the impulse for coördination of the latero-frontal and lateral ciliated cells of the gill passes through the cytoplasm of the cells concerned and that the ciliary rootlets in the latero-frontal cells bring the impulse simultaneously to both rows of cilia within a single cell. There is no evidence that the nervous system is in any way involved in ciliary control.

Physiology (Digestion).—The intracellular digestion of thymus nucleoprotein in triclad flatworms is investigated by E. G. Kelley (*Physiol. Zool.*, Vol. 4, No. 4) by the use of stains and the polarizing microscope. He finds that the hydrolysis of nucleic acid occurs in early stages of the digestion and that the aldehyde compound formed by this hydrolysis is either diffused out of the vacuole or further acted on to form a non-aldehyde compound. Alice M. Bahrs (*Physiol. Zool.*, Vol. 4) studying the modification of the normal growth-promoting power of the digestive mucosa of the rabbit for planarian worms finds this power dependent on the diet of the rabbit and that it is rapidly lost by fasting rabbits. The growth-promoting power of the mucosa is also less in older rabbits.

Physiology (Respiration).—The respiratory function of the blood of the echiurid worm, *Urechis caupo*, is investigated by Alfred C. Redfield and Marcel Florin (*Biol. Bull.*, Vol. 61, No. 2) who show that hemoglobin is contained in the blood corpuscles. These investigators have measured the oxygen and carbon dioxide dissociation curves and also the buffer value of the blood. They find that the worm is able to live during the 18-hour period when the tide does not cover the flats by obtaining oxygen from the movement of the water within the flats. J. William Buchanan in studying the mechanism of oxygen consumption in *Planaria dorotocephala* (*Biol. Bull.*, Vol. 60,

No. 3) finds that the concentration of water in the organism controls the concentration of the oxidative enzymes and hence the consumption of oxygen. The respiratory metabolism during pupal development of the Bee Moth, *Galleria mellonella*, studied by I. R. Taylor and H. B. Steinbach (*Physiol. Zool.*, Vol. 4, No. 4) indicates that individual pupae early in life have a high rate which decreases to a minimum then rises again to a maximum and decreases considerably just before death. A significant sex difference exists and throughout life the respiratory quotient has an approximate average value of 0.69, indicating that glucose is synthesized from fat and simultaneously oxidized. Ann H. Morgan and Helen D. O'Neil (*Physiol. Zool.*, Vol. 4, No. 3) show that in the larvae of the caddis fly, *Macronema zebratum*, the tracheal gills are, so far as oxygen consumption is concerned, only accessory organs and that the oxygen intake occurs through the body integument.

Physiology (Light, Irradiation, etc.).—Leonard B. Clark (*Jour. Exp. Zool.*, Vol. 58) finds that when the insect *Dineutes assimilis*, with one eye covered, is placed in a beam of light it undergoes circus movements and then moves in a path diagonally across the beam of light. Upon orientation with the light rapidly increased it turns from the source, with the light rapidly decreased it turns sharply toward the source. The elimination of circus movements is explained as due to light adaptation progressing to such an extent that some of the ommatidia of the posterior part of the eye are not stimulated after orientation. Increase of intensity results in most of the ommatidia being stimulated and decrease of intensity results in fewer of the ommatidia being stimulated, thus accounting for the turning movements of the insect. In a study of the activating influence of light upon certain aquatic arthropods, William C. Stehr (*Jour. Exp. Zool.*, Vol. 29, No. 1) states that all species studied are quiescent in the dark and that

they all respond to illumination by a definite reflex swimming movement. Various factors such as temperature and metabolism influence this response, and in general the results of the experiment agree with Hecht's hypothesis of photoreception. In contrasting the action of ultra-violet radiation on pigmented and non-pigmented embryos of *Limax flavus*, Emmett B. Carmichael (*Physiol. Zool.*, Vol. 4, No. 4) finds that pigmented (older) embryos are much more easily injured by ultra-violet radiation than the non-pigmented (younger) embryos. J. T. Patterson (*Biol. Bull.*, Vol. 51, No. 2) shows that the rate of mutation in *Drosophila melanogaster* after x-raying is the same whether the treatment is given in one dose or in several fractional doses provided the total dosage is the same. The same author (*Jour. Exp. Zool.*, Vol. 60, No. 2) gives evidence to show that the production of gynandromorphs in *Drosophila* by x-rays is due to elimination of all or a part of one of the X-chromosomes during early cleavage. He suggests that the possible presence of a sex factor in the X-chromosome may be investigated in this way.

Physiology (Activation, Artificial Parthenogenesis, etc.).—In an extensive paper in which comparison is made with his earlier well-known work on the subject, Edwin G. Conklin (*Jour. Exp. Zool.*, Vol. 60, No. 1) takes up the question of the development of centrifuged eggs of ascidians. He shows that the different areas of the ascidian egg are due, not to differences in mitochondria, yolk, pigment, etc., but to physical and chemical differences in the cytoplasm of the ground substance of these areas. If these different areas are dislocated as by centrifuging, dislocations of tissues and organs occur in the larvae. Thus these different areas are composed of "organ forming substances." The cortical change which occurs at fertilization in the starfish egg according to D. M. Whitaker (*Biol. Bull.*, Vol. 60, No. 1) occurs not in the outermost mem-

brane but in the protoplasm within this membrane. Ralph S. Lillie (*Biol. Bull.*, Vol. 60, No. 1) develops the hypothesis that activation of the starfish egg by hypertonic sea water depends on the increased intracellular production by dehydrolytic synthesis of some complex substance, e.g., a protein, while anaerobic activation by acid or heat is a hydrolysis of a phosphagen compound yielding a product which combines with the complex compound to form the specific activating substance. It is shown by Albert Tyler (*Biol. Bull.*, Vol. 61, No. 1) that variation in the rate of activation of *Urechis* eggs with concentration of sea water, the type of activation curves and fertilization of over-exposed eggs are interpretable on the basis of volume change occurring in the diluted sea water, a definite volume change being optimum for activation. The same author (*Biol. Bull.*, Vol. 60, No. 2) finds, in regard to the production of normal embryos by artificial parthenogenesis in *Urechis* eggs, that cleavage is quite variable and that normal embryos occur in small numbers (less than two per cent of cases). Inasmuch as the presence of the sperm in normal development is a factor in determining the plane of bilateral symmetry in the embryo it is suggested that the low percentage of normal embryos in artificially activated eggs is due to the absence of the sperm.

Physiology (Permeability, Antagonistic Action, etc.).—The toxic and antagonistic actions of Potassium, Calcium, Magnesium and Sodium ions on *Cambarus clarkii* have been investigated by O. M. Helff (*Physiol. Zool.*, Vol. 4, No. 3) who finds that the cations are progressively less toxic in the following order: Potassium, Calcium, Magnesium, Sodium. The author also finds that solutions containing the metallic ions in the same concentrations as present in the blood are less toxic than those having the ionic concentration of sea water. John R. Fowler (*Physiol. Zool.*, Vol. 4, No. 2) studying the mass resistance of

Daphnia to toxic electrolytes finds that groups of *Daphnia* live longer than single individuals in stronger concentrations of a variety of toxic solutions while single individuals survive longer than groups in weaker concentrations of the same solutions. He also finds that carbon dioxide is a very important factor in causing differential survival between groups of *Daphnia* and single individuals when exposed to toxic solutions. Dorothy R. Stewart finds (*Biol. Bull.*, Vol. 60, No. 2) that ammonium salts of the first five saturated fatty acids in solutions isosmotic with sea water cause swelling of *Arbacia* eggs. The results agree with Jacobs' theory that the undissociated ammonia and the fatty acid formed by hydrolysis of the salt penetrate the cell separately and unite again after entrance. Evelyn Howard (*Biol. Bull.*, Vol. 60, No. 2) studying the effect of fatty acid buffer systems on the apparent viscosity of *Arbacia* eggs finds that the degree to which fatty acids decrease the protoplasmic viscosity of the egg can be altered by the presence of the salt of the acid, apparently by virtue of the influence of the salt on the intracellular hydrogen ion equilibrium.

Physiology (Water effects, Immersion, etc.).—Milton Walker Eddy (*Jour. Morph. and Physiol.*, Vol. 51) uses recovery from immersion in water as an index for the metabolism and the condition of the gonads in *Drosophila* and *Popillia*. In the case of females the recovery periods from immersion can be used to group individuals possessing approximately equal egg-laying capacities and to isolate spent individuals from others still capable of laying eggs. The dilution of body fluids by injection of distilled water is found by L. P. Sayles (*Jour. Exp. Zool.*, Vol. 58) to bring about enlarged nuclei and double nucleoli in the cells of the digestive tract except for that part which lies in the first eleven or twelve segments. H. W. Stunkard and C. Ruth Shaw (*Biol. Bull.*, Vol. 61, No. 2) show that six species of marine cercariæ are able to withstand for considerable periods solutions con-

taining only one-quarter to one-eighth sea water thus throwing some light on the ability of these species to migrate into brackish and fresh water. Experiments by H. W. Stunkard and A. R. Onorato (*Biol. Bull.*, Vol. 61, No. 1) on the turtle blood fluke *Spiroorchis* show that tap water is the most suitable medium for development and hatching of the eggs. Studying the disintegration of *Planaria maculata* in potassium cyanide in pond water and in diluted Ringer's solution, J. Walter Wilson (*Jour. Exp. Zool.*, Vol. 60, No. 3) concludes that disintegration takes place much more rapidly in the pond water mixture than in the Ringer mixture and that it takes place from the margin inward rather than from the anterior to the posterior end.

Physiology (Temperature Effects).—Willard F. Stanley (*Physiol. Zool.*, Vol. 4, No. 3) working on the effect of temperature on vestigial wing in *Drosophila* finds that when flies are reared at a series of constant temperatures there is a sexual dimorphism of wing length at all temperatures except at 28.5° C. and at an unknown temperature between 17° and 25° C. He also determines the temperature-effective period for vestigial wing length at 17° and 27° C. The relation between temperature and gene expression is studied by Ernest C. Driver (*Jour. Exp. Zool.*, Vol. 59, No. 1) who shows, by raising bar mutant *Drosophilas* at a series of constant temperatures, that facet number varies with the temperature in geometrical progression. The temperature-effective period in infrabar races and their heterozygotes is investigated by Wilbur M. Luce (*Jour. Exp. Zool.*, Vol. 59, No. 3) who concludes generally that in bar races and infrabar \times bar heterozygotes the chief effect of temperature upon the number of facets is the effect upon the processes that begin and terminate the effective period and not the effect on the facet forming process itself, while in infrabar the chief effect of temperature upon facet number is its effect upon the

facet forming process. In a continuation of her work upon the neutral red reaction, Vera Koehring (*Jour. Morph. and Physiol.*, Vol. 52, No. 1) working on thermal relationships maintains that neutral red staining shows reactions to temperature changes which may be correlated with the thermal reactions of enzymes.

Physiology (Effects of Food and Crowding).—C. A. Stuart, H. J. Cooper and Juanita Tallman (*Physiol. Zool.*, Vol. 4, No. 4), studying the effects of available food and crowding as factors influencing the sex of *Moina macrocopa*, show that when *Moina* mothers are crowded in various dilutions of normal medium or in various dilutions of bacterized filtrates of normal medium they produce young with similar sex ratios. If mothers are crowded in bacterized dilutions of normal medium they produce usually female young. In general, food is considered to be the effective factor in sex control. The same authors (*Physiol. Zool.*, Vol. 4, No. 4) show on the other hand that

conditions may exist under which neither excretory substances nor quantity of available food can be ascribed as the immediate factor in the control of sex in *Moina*.

Genetics.—Genetic evidence for diploidism of biparental males in *Habrobracon* is presented by Magnhild M. Torvik (*Biol. Bull.*, Vol. 61, No. 2). In *Habrobracon* no sex chromosomes are present and consequently it is difficult to account for the production of males. According to the evidence presented, biparental males in *Habrobracon* appear to be diploid and their daughters seem to be triploid. A. M. Hersh (*Jour. Exp. Zool.*, Vol. 60, No. 2), making a systematic study of the effects of different sections of a chromosome marked by well known genes in relation to the effect they have singly and in combination upon the phenotypic expression of some other factors in *Drosophila*, presents evidence to show that there is a periodic distribution of plus and minus modifiers of facet numbers in the *X*ple chromosome.

VERTEBRATE PALEONTOLOGY

By FREDERIC B. LOOMIS

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WORK IN THE FOSSIL FIELDS

General.—While field work has been restricted and extensive expeditions were not undertaken this year, the American fossil fields were worked intensively and yielded much which will complete our knowledge of the vertebrate life of this continent.

Fish.—The University of Missouri has undertaken to solve the problem of the nature of the tiny Conodont teeth, *i.e.* whether they belong to fish or some invertebrate and for the purpose has collected thousands of them from beds of Ordovician to Pennsylvanian age. The University of Kansas will add a number of fresh water fishes when they study those found this summer in the diatomaceous marl of that state of Pliocene age.

New tiny amphibians were also found at Garnett, Kansas, in the Pennsylvanian.

Dinosaurs.—The dinosaur fields were less worked but the Royal Ontario Museum at Toronto obtained a skeleton of that agile, but toothless little dinosaur, *Struthiomimus*, as well as a trachodon skeleton and some new skulls of dinosaurs from Alberta. The University of Missouri obtained an aquatic dinosaur from Kansas. The Princeton party found more shells of dinosaur eggs in Montana. Several parties worked in the Mammal beds. The Princeton party collected a set of the tiny multituberculates from the Wind River, several of which are new. The U. S. National Museum, working in the Wasatch beds, got a

skeleton of the big carnivor, *Pachaena*, and three skeletons of *Coryphodon*.

The **Oligocene beds** yielded well to several parties.—Amherst College, University of Chicago, Harvard, South Dakota School of Mines, New York University and the Denver Museum. The Harvard party worked a quarry south of Torrington, Wyoming, where they are getting great quantities of a new short-legged horse of the *Meshippus* type; and a small hornless rhinoceros. There are also numerous bird bones in the deposit which will enlarge our knowledge of this group greatly.

The **Denver Museum** opened a new quarry found while digging irrigation ditches south of Torrington, Wyoming, which has preserved large numbers of another hornless rhinoceros and pig, *Elotherium*. This quarry yielded over 40 rhinoceros skulls and skeletal material in proportion.

The **Carnegie Museum of Pittsburgh** completed its third year of work in Utah in a bed between the Uinta formation and the Oligocene, where they are steadily finding new forms bridging the gap between the Eocene and Oligocene.

The **Miocene beds** yielded *Stenomylus* (a slender camel) to both Amherst College and Harvard. In the Lower Miocene Amherst College found skeletons of tiny deer and a weasel which is new and of *Merychys*, that curious oreodont with a proboscis.

The **U. S. National Museum** again worked in their Idaho quarry and the result of the two years there is three complete skeletons and 40 skulls of that horse, *Plesippus*, which is of especial interest as the transition form to *Equus*, the genus to which the modern horses belong.

The **Pleistocene** has yielded skeletons of three mammoths, one in Colorado, one in Nebraska and one in Texas.

Folsom "Arrow Point."—Interest in the Folsom (New Mexico) type of "arrow point" found originally with an extinct bison is intensified by

finding one of these points imbedded in the shoulder blade of the Nebraska mammoth but especially by a find in New Mexico. Here, in digging in a cave, a sequence was found as follows; above remains of the basket-maker man, 18 inches below a layer of bones including sloth, horse, and camel, and still lower a Folsom type "arrow point." This is the first time this type of artifact has been connected with other dateable human remains, or with dateable vertebrates like the sloth and horse.

MUSEUM EXHIBITS

Dinosaur Mounts.—The Museums have added steadily to their exhibits. The two most striking mounts are the giant dinosaurs, *Brontosaurus* at Yale and *Diplodocus* at the U. S. National Museum both of which have been several years in preparation. The Toronto Museum has mounted a new dinosaur, *Tetragonosaurus*, from Alberta; and the Ottawa Museum is showing some of the Lower Cretaceous Dinosaur tracks found on Peace River. Princeton has put on exhibition a skeleton of that strange six-horned camel (?), *Protoceras*, the only one complete enough to mount.

Reptile Mounts.—From the South American collection the Field Museum have mounted two skeletons of the Bolivian Pleistocene sloth, *Scelidodon*, and a *gyptodon*. They also have a skeleton of the queer oreodont, *Pronomotherium*. Princeton has mounted the Miocene sloth, *Hapalops*. The University of Chicago is getting its South African collection prepared, the first skeleton being the clumsy reptile, *Parciasaurus*, and a number of skulls of those Permian reptiles, some carnivorous and others more or less toothless.

Harvard has mounted and described its new Oligocene horse, *Meshippus barbouri*, from Wyoming and also mounted the camels, *Stenomylus* and *Oxydactylus*.

BIBLIOGRAPHICAL

Osborn.—The outstanding publication of the year is Osborn's *Mono-*

graph of the *Titanotheres*, the result of 25 years and more of study which takes up the history of this great group of extinct Oligocene animals from United States and Asia, illustrates all the genera and species, describes their peculiarities and establishes their relationships to each other and the other groups.

The Carnegie Museum has begun describing the many new forms found in their Utah quarry in several bulletins from the Museum.

Princeton publications include Scott's description of the strange Miocene *Homalodotherium* from South America. Sinclair describes further

Marsupial Carnivores from the same region. Jepsen adds several new multituberculates from the lowest Eocene.

CONCLUSION

The progress for the year 1931 will be in the steady finding of new forms which fill in gaps in the histories of the various families, going far in the building of consistent phylogenies of the living and extinct families of vertebrates. The establishing of the antiquity of Man in America has also made great progress in finding associations of human artifacts with well established early men and animals of wide distribution.

BOTANY

BY MILDRED E. MATHIAS

BOTANIST AND WRITER

BOTANICAL SOCIETIES

Annual Meeting at New Orleans.

—The annual meeting of the American Association for the Advancement of Science, including the Botanical Section, and such affiliated societies as the Botanical Society of America, the Ecological Society of America, the Phytopathological Society of America, the American Society of Plant Physiologists, and the American Society of Naturalists, was held in New Orleans during the Christmas holidays, 1930. The program included symposia on subjects of general interest as well as individual reports on research projects.

Summer Meetings and Symposia.

—In addition to the usual winter meeting of the American Association for the Advancement of Science, the first of a series of summer sessions was held in Pasadena in June. This meeting was of a more informal nature with much time devoted to general symposia and field excursions. Symposia of especial interest to the botanists were those on genetics and photosynthesis. The Botanical Society of America, in addition to the session in Pasadena which was attended largely by western botanists,

also held an informal summer meeting at Pennsylvania State College for the benefit of the eastern members of the organization.

Cinchona Congress.—The proceedings of the Cinchona Congress held in St. Louis in 1930 were published by the Missouri Botanical Garden. The volume contains papers on the history, chemistry, culture, medicinal and pharmaceutical properties, alkaloids and the uses of Cinchona.

PLANT PHYSIOLOGY

Textbooks.—The study of plant physiology continues to be an outstanding field for botanical research. A general textbook has been prepared by Miller with the title of *Plant Physiology, with Reference to the Green Plant*. Lyon has translated Kostychev's *Chemical Plant Physiology* which contains a summary of the life processes of the plant considered in their chemical aspects.

Plant Respiration.—Papers which have been concerned with respiration include those by Overholser, Hardy and Locklin working on strawberries, Green and Johnson on "Effect of petroleum oils on the respiration of bean leaves," and Michaels, "Respiration

of the shoot as affected by temperature changes of the root."

Germination.—The study of germination has been continued by Van Ohlen with a microchemical study of soybeans, Pei-Sung Tang working in the laboratories of Harvard University and Johns Hopkins University on germinating seeds of *Lupinus albus*, *Zea Mays* and wheat, and Wright, "The effect of high temperatures on seed germination."

Light and Radiation.—The subject of light and radiation has continued to hold an important position in physiological researches. Two papers of interest on ultraviolet radiation are those by Miss Lojkin on "Some effects of ultraviolet rays on the Vitamin D content of plants as compared with the direct irradiation of the animal" and Fuller on "Stimulatory effects of radiation from a quartz mercury vapor arc upon higher plants." Ware Cattell has published an interesting note on "The effects of x-rays on the growth of wheat seedlings" and Miss Johnson has a paper "On the alleged stimulating action of x-rays upon plants." Papers concerned with the study of phototropism and photoperiodicity have been published by Johnston, Brackett and Hoover, Garner and Allard, Eaton, Smith and Smith, Skutch and Schaffner.

Plant Composition and Mineral Nutrients.—The knowledge of the chemical composition of the plant and the mineral nutrients necessary for satisfactory plant growth has been added to by studies on nitrogen in Bartlett pear shoots, cotton and the willow; carbohydrate and nitrogen constituents of sugar prunes, phosphorus deficiency in the tomato, the absorption of ammonium and nitrate nitrogen by various plants, the essential nature of copper for green plants, the absorption of mineral elements by plants, the influence of acetic, propionic, normal butyric and sulphuric acids and potassium acetate on elongation of primary roots of seedlings of lupines; the chemical composition of marine algae, "Effects of mineral salts upon the transpiration and water requirement of

the cotton plant," inorganic constituents in *Citrus*, and boron deficiency in *Citrus*. The movement of inorganic materials and water in plants has been discussed in papers by Crafts, Smith, Dustman and Shull, and Harvey.

Miscellaneous Studies.—Lund has added to his papers on polarity potentials in the Douglas Fir. Osterhout and Hill have continued their studies on *Nitella* with the publication of several papers. Wallace has published three papers of a series on the sensitivity of *Mimosa pudica*.

MORPHOLOGY AND ANATOMY

Research.—Papers of general interest to the anatomist and morphologist include those by Penfound on "Plant anatomy as conditioned by light intensity and soil moisture"; Foster, "Phylogenetic and ontogenetic interpretations of the cataphyll," and Eames, "The vascular anatomy of the flower with refutation of the theory of carpel polymorphism." In the last-named paper the author maintains that the theory of carpel polymorphism is fallacious and is based upon fundamental misinterpretations of stem anatomy. Several series of researches have been added to by various papers such as Johansen's "Studies on the morphology of the Onagraceae," Frost's "Specialization in secondary xylem of dicotyledons" and Smith's "Development of *Dionaed muscipula*."

Publications concerned with the morphology and anatomy of certain groups include those by Meyer and Walker on *Impatiens pallida*, Karpel on Sorghum, Kennedy and Crafts on *Convolvulus arvensis*; Pfeiffer on *Gladiolus*, Lampe on the developing endosperm of maize, Langdon on the foliar organs of *Carya cordiformis*, Holm on *Hamamelis virginiana*, Bowers on *Rhododendron catawbiense*, Guard on the soybean, Dowding on *Arceuthobium americanum*, and E. N. Jones on *Ceratophyllum demersum*.

Gymnosperms.—Two papers concerned with the morphology of Gymnosperms are those by Cooper "The layering habit in Sitka spruce and the two western hemlocks" and Clar

and Johnstone, "Polyembryony and germination of polyembryonic coniferous seeds."

Lower Plant Groups.—Morphological and anatomical studies on lower plant groups have been continued by Barclay working with *Selaginella*, Cross with *Osmunda* and Hartman with the *Polypodiaceae*.

TAXONOMY

Explorations.—Botanical explorations have been continued in various parts of the country during 1931. M. E. Jones had added to the collections from southern Texas and northern Sonora and also spent some weeks collecting plants in northern California. Steyermark and Moore made an intensive botanical survey of the mountains of western Texas. An expedition to the northwestern states to study *Scrophulariaceae* and *Polemoniaceae* was made by Pennell and Wherry. J. W. Thompson has continued his field work in Washington and Oregon. Graham spent several months in northeastern Utah making plant collections for the Carnegie Museum. The Bartlett Expedition to Greenland and Iceland made plant collections for American herbaria. These together with numerous local collections made in various parts of this country by students and foreign material collected on expeditions in other countries have greatly increased the collections available for study.

Publications of Gray Herbarium.—Taxonomic publications issued from the Gray Herbarium of Harvard University include a list of "The vascular flora of St. Paul Island, Nova Scotia" by Miss Perry; descriptions of new species of the Eupatoriaceae and revisions of the Steviaceae of Colombia, Venezuela and Ecuador by Dr. Robinson; a "Vascular flora of the Guano Islands of Peru" and "New Spermatophytes from Mexico and Argentina" by Johnston; "Studies in the Bromeliaceae" by Smith; "Taxonomic studies in *Cuphea*" by Bacigalupi, and papers on *Asplenium* and *Trichomanes* by Weatherby.

Arnold Arboretum.—Two taxonomic papers of interest on work done at the Arnold Arboretum are "A

synopsis of *Robinsonella*" by Mrs. Roush and a "Conspectus of the genus *Amorpha*" by Palmer.

U. S. National Museum.—Numerous taxonomic publications have appeared from the laboratories of the United States National Museum and the Bureau of Plant Industry. They include a revision of the South American species of *Viburnum* by Killip and Smith, a revision of the genus *Lozanella* by Killip and Morton, the publication of numerous new species of South American plants by Killip, "New grasses from China" by Keng, Leonard's revision of the Peruvian species of *Mendoncia*, a treatment of the genus *Cladonia* by Robbins and Blake, a review of the genus *Amphibromus* by Swallen, and the publication of new species of Asteraceae by Blake.

Individual Papers.—Standley working at the Field Museum has continued a series of studies of American plants and also published revisions of the Rubiaceae of Bolivia and Ecuador, and of the Cyperaceae of Central America. Macbride has published a paper on Peruvian Spermatophytes. Sherff has continued a series on the Compositae.

Other papers of interest include the first of a series of "Studies in Iowa plant-life" by Kelley, a list of "Plants new to Arizona" by Kearney, "Rocky Mountain Herbarium Studies" by Nelson, a continuation of "Studies in Onagraceae" by Munz, a revision of the genus *Polycodium* by Ashe, and part four of "New and noteworthy northwestern plants" by St. John.

The New York Botanical Garden has carried on the publication of the *North American Flora*, and has started a new series of publications under the title of *Brittonia*. The first issue appeared in February, 1931, and contained a taxonomic paper by Howe and Taylor on marine algae from Brazil. The purpose of *Brittonia* is to publish a series of papers on systematic botany and plant geography.

Missouri Botanical Garden.—The *Annals of the Missouri Botanical Garden* have contained two taxonomic works—"A monograph of the genus

Sidalcea" by Mrs. Roush and "A revision of the genus *Fraseria*" by Card.

University of California.—Publications from the University of California include papers by Copeland on *Raratonga* ferns and oriental Pteridophytes, Halperin on *Poa bulbosa*, and Yamada on *Laurencia*.

Ohio State University.—Schaffner of Ohio State University has continued a series on "Principles of plant taxonomy." Waller has published a taxonomic treatment of the native *Iris* of Ohio; and Miss Henderson has made a revision of the *Hypnales* of Ohio.

Ferns and Mosses.—Papers concerned with ferns, mosses and algae include "Fern notes" by Farrell, "Additional Costa Rican Mosses" by Bartram, a list of "The algae of St. Paul Island" by Miss Roscoe, and a study of the "Algae of Marion County, Indiana" by C. M. Palmer.

Floristic studies, in addition to those mentioned above, are a "Flora of Columbia, Missouri" by Rickett; Cooper "The seed-plants and ferns of the Glacier Bay National Monument, Alaska"; Blomquist "A check list of the common mosses of Durham, N. C., and vicinity," and Part Six of Peattie's "Flora of the Tryon region."

Text and Hand Books.—Johnson has published a textbook on the taxonomy of flowering plants. Miss Barrett has prepared *A field key to the genera of wild and cultivated hardy trees of the northeastern states and Canada*. A popular handbook containing brief descriptions and numerous illustrations has been prepared by Harned on the *Wild flowers of the Alleghenies*.

MYCOLOGY

There have been numerous contributions to the field of mycology during the past year. Outstanding among them is *The Genera of Fungi* by Clements and Shear. Buller has published the fourth volume of his *Researches on Fungi*. Of especial interest to the student of the rusts is Jackson's paper on "Present evolu-

tionary tendencies and the origin of life cycles in the Uredinales."

Numerous papers of interest have appeared in the field of phytopathology concerned with studies of the sugar cane mosaic, tobacco mosaic, pineapple root-rot, *Phymatotrichum* root-rot, infection of *Populus* by *Valsa* species, anthracnose, alternariose and Botrytis rot of the snowberry, cotton root-rot, powdery mildew and bacterial pustule disease of soybeans, diseases of lilies, aster yellows, wheat rusts, graft-blight of lilac, *Fusarium* wilt of peas, brown spot of tobacco, sorghum rust, green rot of apricots, the late blight of sugar beets, spur blight of raspberries, a rust of cling-stone peaches, sugar-beet yellows, target blotch of sugar cane, the brown heart-rot of redwood, and many other plant diseases. Reynolds has published a paper on the physiology of plant disease. A work of general interest is "The challenge of plant virus differentiation and classification" by Johnson and Hoggan.

Papers concerned with the reactions of fungi to environmental factors include one by Miss McCrea on *Claviceps purpurea* in which she reports oxygen increases growth and light increases ergosterol content of saprophytic cultures, two papers by Castle on the phototropic sensitivity of *Phycomyces*, Stevens "The ascigerous stage of *Colletotrichum lagenarium* induced by ultra violet irradiation," Marloth "The influence of hydrogen-ion concentration and of sodium bicarbonate and related substances on *Penicillium italicum* and *P. digitatum*," and papers by McHargue and Calfee on the "Effect of manganese, copper and zinc on the growth and metabolism of *Aspergillus flavus* and *Rhizopus nigricans*" and the "Effect of manganese, copper and zinc on the growth of yeast."

Taxonomic studies of the fungi include papers by Sideris on the Pythiaceae and Sparrow on the genus *Pythium*, Overholts on American *Porias*, Shope on Colorado Polyporaceae, Linder on the genus *Helicoceras* and the Helicosporeae; and "Notes on Iowa fungi" by Martin, "Studies in

Gonoderma" by Haddow, South American rusts by Jackson, descriptions of cup fungi by Seaver, new Chytridiaceae described by Sparrow, observations on species of water molds by Couch, and a paper on Hymenomycetous fungi of Siberia by Burt.

Among the publications concerned with the life histories and morphology of fungi the following may be mentioned: the continuation of Karling's "Studies in the Chytridiales," Miss Walker's "Studies on *Ascoidea rubescens*," "A comparative study of *Sclerotium Rolfsii* and *Sclerotium Delphinii*" by Stevens, "The life history of *Physarum polycephalum*" by Howard, "The mechanism of sex in *Uromyces appendiculatus* and *U. vignae*" by Andrus, "Spore germination of *Puccinia glumarum*" by Raeder and Bever, and "Nuclear division and development of sterigmata in *Coprinus atramentarius*" by Miss Vokes.

A paper of interest to the geneticist as well as the mycologist is that by B. O. Dodge on the "Inheritance of the albinistic non-conidial characters in interspecific hybrids in *Neurospora*."

CYTOLOGY

Many cytological papers have been concerned with the problems of genetics and will be mentioned under that heading. The study of chromosomes has received attention from several workers, among them Dermen with a paper on "Polyploidy in *Petunia*," Woodworth on "Polyploidy in the Betulaceae," Mrs. Erlanson on tetraploid roses in Oregon, Miss Fisk on chromosomes of *Lathyrus tuberosus*, Sax on the ligneous Saxifragaceae, Johansen on *Piper subpeltatum*, McKay on the Cucurbitaceae and Taylor on the genus *Gasteria*. Belling has made a study of the "Chromomeres of Liliaceous plants." Cooper has presented a paper on "Microsporogenesis in *Buginvillaea glabra*." And Navashin has published on "Chromatin mass and cell volume in related species."

GENETICS

Maize.—The genetical study of maize has continued to occupy a

prominent position with papers by Miss McClintock on the genes *C*, *Sh* and *Wx*, Creighton and McClintock on "A correlation of cytological and genetical crossing-over in *Zea Mays*," Rhoades on "Cytoplasmic inheritance of male sterility in *Zea Mays*," Jones on "Dioecious maize," Jorgenson "Brown midrib in maize and its linkage relations," Garber "Inbreeding with particular reference to maize," Cooper and Brink "Cytological evidence for segmental interchange between non-homologous chromosomes in maize," McClintock and Hill "The cytological identification of the chromosome associated with the R-G linkage group in *Zea Mays*," E. G. Anderson and R. A. Emerson "Inheritance and linkage relations of chocolate pericarp in maize," and Eyster "Heritable characters of maize." In addition to these numerous papers those presented at the symposium on maize held at the American Association for the Advancement of Science meetings in Des Moines in 1929 have been published and include discussions on the genetics of maize. McClelland has prepared *Bibliographies on Genetics and Breeding of Corn and Cotton* with some 1300 references.

Oenothera.—Genetical papers on *Oenothera* include Cleland on *O. rubricalyx* "afterglow" and "Cytological evidence of genetical relationships in *Oenothera*," Brittingham on *O. Lamarckiana* *mut. acutifolia*, Davis on *O. Lamarckiana*, and Sterling Emerson "The inheritance of certain characters in *Oenothera* hybrids of different chromosome configurations."

Crepis.—The genus *Crepis* has been treated by Navashin with a paper on "Spontaneous chromosome alterations in *Crepis Tectorum* L." and C. F. Poole on "The interspecific hybrid, *Crepis rubra* x *C. foetida*, and some of its derivatives. I."

Wheat.—The genetics of wheat has been discussed in papers by Rosenquist on hybrid vigor, W. P. Thompson on the cytology and genetics of certain crosses, and Florell on the genetics of wheat x rye hybrids.

Nicotiana.—Genetical studies of *Nicotiana* have been continued by

Anderson and De Winton on self-sterility and self-fertility in the genus, Clausen "Inheritance in *Nicotiana tabacum*," and Lammerts on "Interspecific hybridization in *Nicotiana*."

Miscellaneous.—The genetics of *Matthiola*, the tomato, *Gladiolus*, *Brassica*, and the cultivated Cucurbits have been studied by various workers. Sax has presented an important paper on "The origin and relationships of the Pomoiidae." Other papers of general interest include those by E. Anderson "Internal factors affecting discontinuity between species," Wright "Evolution in Mendelian populations," and Babcock "Cyto-genetics and the species-concept."

ECOLOGY AND PLANT GEOGRAPHY

Regional Vegetation.—Studies concerned with the vegetation of limited regions include Steyermark's paper on plant distribution in relation to the acidity of various soils in Missouri, papers by Cain and Camp on the Great Smoky Mountains, Miss Morrow's discussion of the plant communities in south-central Texas, Bruner's monograph on "The vegetation of Oklahoma," Mulvania's survey of a Florida scrub, Blizzard's paper on High Hill, Long Island, Cattle on southwestern Texas, Cooper's study of plant successions at Glacier Bay, Alaska, Klyver's study of a transect of the Sierra Nevada Mountains, Rydberg's phytogeography of the prairies and great plains, Costello's study of river bluff successions along the Missouri River, Montgomery "Ecology of the mosses of Grand de Tour region of Illinois," and Kienholz "The vegetation of a lava-formed lake in the Cascade Mountains."

Distribution.—Papers discussing distributions of certain species are those by Cheney on American plant arrow poisons, Goodman on Rocky Mountain plants, Eaton's study of *Arceuthobium pusillum*, and Fernald "Specific segregations and identities in some floras of eastern North America and the Old World."

Environmental Factors.—The rôle of environmental factors has been reported by Barrett on the "Influence of forest litter on the germination and early survival of Chestnut Oak," Kienholz on the wood structure of the Lodgepole Pine, Holch "Development of roots and shoots of certain deciduous tree seedlings," Rigg and Harrer "The root systems of trees growing in sphagnum," Dillman "The water requirement of certain crop plants and weeds in the northern Great Plains," Sinclair and Sampson "Establishment and succession of vegetation on different soil horizons," Hursh and Haasis "Effects of 1925 summer drought on southern Appalachian hardwoods," and Shreve "Physical conditions in sun and shade."

A general text on *Plant Ecology* has been published by W. B. McDougal.

MISCELLANEOUS PUBLICATIONS

Paleobotany.—Publications in the field of paleobotany include short papers by Berry describing a *Bothrodendron* from Bolivia and "A new miocene *Cercis* from Idaho and Washington," Arnold's descriptions of new species of *Cordaites* and *Dadoxylon*, Chrysler's description of "A fossil cycad in New Jersey," a discussion by Wieland on "Why the Angiosperms are old," and Hollick's paper on "Plant remains from a pleistocene lake deposit in the upper Connecticut River valley." A semipopular book on paleobotany has been published by Noë with the title *Ferns, fossils and fuel*.

Gardening Books.—Books for the gardener are McCully *American Alpines in the Garden*, Hume *Azaleas and Camellias*, Shull *Rainbow Fragments—the Garden Book of Iris*, and Ramsey and Lawrence *Garden Pools—Large and Small*. Morris has published a revised edition of his book on *Nut Growing*. A noteworthy volume in this group is E. H. Wilson's *If I Were to Make a Garden*.

Higgins has prepared a volume on *Our Native Cacti*; and Medsger has published *Nature Rambles—Spring*

ECONOMIC BOTANY

ECONOMIC BOTANY

By H. K. HAYES

DIVISION OF AGRONOMY, UNIVERSITY OF MINNESOTA

UNIFORMITY OF TYPE IN CROP PLANTS

It is recognized that natural crossing is one of the main causes for lack of purity in crop plants. There has been great interest in the cause of abnormal types called "rogues" which frequently appear in strains of canning peas. In a recent bulletin (*Wisconsin Agricultural Experiment Station Research Bul. 101, 1930*), Renard concludes that rogues in canning peas in Wisconsin can be explained on the basis of natural crosses between different varieties. If such is the case purity of type can be controlled by greater care to prevent crossing between varieties. Robertson and Deming report a study of natural crossing in barley under Colorado conditions (*Jour. Amer. Soc. Agron. 23: 402-407, 1931*). In standard six-rowed commercial varieties the frequency of natural crosses was very small, ranging from one in ten thousand to one in over 37 thousand plants. In one two-rowed variety over three per cent of natural crosses occurred.

EXPERIMENTAL MODIFICATION OF HEREDITY IN CROP PLANTS

Stadler presents two papers on this subject (*Sci. Agr. 11: 557-572 and 645-661, 1931*). It is now well known that heritable characters are dependent upon genetic factors located in the chromosomes. Stadler summarized some of his own studies with the effects of x-rays in inducing mutation in corn and barley. Two sorts of changes were studied: (1) induced chromosomal irregularities; (2) induced mutation. The first of these often results in partial sterility. Chromosomal mutations are generally considered to be of greatest promise in horticultural plants which can be propagated vegetatively. The factor changes by induced mutation were of the same sort as occasionally appear spontaneously in nature. X-rays ap-

pear to speed up the frequency of such changes.

POLYPLOIDY IN PETUNIA

There is a growing appreciation of the importance of polyploidy in plants, i. e. increase in chromosome number as multiples of a basic number. Dermen (*American Journal of Botany 18: 250-261, 1931*) describes polyploidy in the petunia and discusses other studies of polyploidy in the Solanaceae. Tetraploid petunias produced both large and small flowered progeny in a 3:1 ratio. While some increase in the size of plant organs appears to be correlated with an increase in chromosome number, it was concluded that the large size of flowers in the polyploid petunia was explained more logically by a genetic factor for flower size.

PLANT PHYSIOLOGY

Water requirement has been defined as the ratio of the amount of water absorbed by a plant during its growth to the weight of dry matter produced. Dillman (*Jour. Agr. Res. 42: 187-238, 1931*) compares the water requirement of various crop plants and weeds. He found a wide range from 224 for Russian thistle to 1183 for western wheat grass. The low value for Russian thistle explains why it is so serious a weed pest in dry seasons. The millets and sorghums had a low water requirement, oats and wheat an intermediate value, while flax had a considerably higher water requirement.

Vitamin A in Corn.—Hauge and Trost (*Journal Biological Chemistry 86: 167-172, 1930*) concluded that the vitamin A content of normal dent corn was controlled by the same heritable factors that are responsible for the development of yellow color in the endosperm. It is impossible apparently to transfer this factor to white dent corn.

Growing Factors in Corn.—Holbert (*U. S. Dept. Agr. Yearbook*, 1931) points out that when corn is grown in productive soil it is more resistant to cold in both the seedling and mature plant stage. The growth of legumes and the application of fertilizers when necessary are recommended as aids in giving the corn crop a longer growing season. Brunson (*U. S. Dept. Agr. Yearbook*, 1931) emphasizes the importance of selecting a variety and strain of pop corn which has high expansion ability. This he found to be an inherited character which can be fixed by selection. Inherited variations in flavor were noted also.

NEW CROP PLANTS

White Pods in Snap Beans.—Currence (*Jour. Heredity* 22: 21-23, 1931) describes a new pod color in snap beans which resulted from a cross of the ordinary yellow podded wax variety with a pale green podded variety, Crystal White Wax. The new combination obtained in the second generation of this cross bore pods of a white color which resulted from the combination of heritable factors for both the yellow and pale green color of the two parents. Attempts will be made by crossing to combine the new character, white pod, with the other characters desired in a variety of snap beans.

Two species of *Crotalaria*, *strata* and *spectabilis* are described by McKee (*U. S. Dept. Agr. Yearbook*, 1931), which have great promise as new summer cover and green manure crops, especially for sandy lands in the south. So far they have been used chiefly as green manure. They belong to the legume family and are adapted only to southern regions.

Japan Clover.—Another new forage crop called *Lespedeza* or Japan clover is described by Pieters in the same volume (p. 344). There are several species and varieties and all thrive on land too sour for such plants as alfalfa and clover. In southern United States and on good soil the common *Lespedeza* grows sufficiently tall for hay but in most cases the

crop is used for pasture or soil improvement.

BUD VARIATIONS

Shamel and others (*Jour. Heredity* 22: 81-89, 1931) have made extensive studies with bud variations with Bartlett pear trees. The method is to study individual limbs and trees within an orchard and isolate those which appear strikingly different from the normal. If such occur it is necessary to make progeny trials by top-working with buds from the variations to be tested. They found many variations which could be propagated and which would reproduce themselves. These were considered important in two respects: (1) they show the necessity of a careful selection of budwood in order to eliminate undesirable bud variations; (2) they are also of importance in the production of superior commercial strains.

DISEASE RESISTANCE

Inheritance of smut resistance in sorghums was described by Swanson and Parker (*Jour. Heredity* 22: 514-56, 1931). In crosses between parental varieties which bred true for resistance and susceptibility to sorghum smut the first generation of the cross was susceptible and there was a close approximation to the ratio of three susceptible to one resistant in the second generation. From the results it was concluded that it would be possible to combine in a single variety resistance and other grain or stalk characters available by crossing and selection.

Walker (*Wisconsin Agr. Exp. Sta. Research Bul.* 107, 1931) discusses resistance to *Fusarium* wilt in canning peas. He concludes that in some varieties such as Alaska it is possible to build up resistant varieties by selecting resistant plants. Other varieties such as Perfection appear to carry no heritable factors for wilt resistance. In such cases crosses must be resorted to in attempting to breed resistant sorts of the Perfection type.

Isbell (*Jour. Heredity* 22: 191-197, 1931) describes studies carried on in

1928 to 1930 for the purpose of isolating if possible strains of pole snap beans which were resistant or immune to nematodes. Varieties differ widely in the extent of their susceptibility to nematodes. Two selections from unnamed varieties were highly resistant where standard varieties were heavily infested. Both resistant lines were high yielders and one compared favorably in quality as a snap bean to the well established variety, Kentucky Wonder.

Coons and others (*U. S. Dept. of Agr. Yearbook*, 1931) describes some of the results obtained by crossing wild beets of the species *Beta maritima* with commercial high sugar varieties. Strains of the wild species are resistant to curly top and these have been crossed with the commercial sorts. Some individuals are obtained which approach toward the commercial types which are also resistant to curly top. It is believed that continued selection with constant exposure to curly top may lead to the desired combination of resistance to the disease and the high quality of the commercial variety.

In a study of color inheritance in the onion to the smudge disease caused by the organism *Colletotrichum circinans*, Rieman (*Jour. Agr. Res.* 42: 251-278, 1931) has found that the same inherited factors which are responsible for the development of red and yellow pigments are also necessary for the production of a toxic substance, protocatechuic acid, in the outer scales of resistant onions.

INSECT RESISTANCE

Parker (*U. S. Dept. Agr. Yearbook*, p. 317, 1931) describes varieties of sorghums and wheats which are resistant to insect injury. Special plantings of sorghum are made at one edge of a wheat field to test resistance of various varieties to chinch-bug injury. When the wheat is cut the bugs migrate to the sorghums. Wide differences in the degree of susceptibility were noted among different varieties. For many years studies have been made where wheat varieties have been compared with reference to their injury from the Hessian fly. Some varieties have had only a trace of injury, 0-3 per cent, while others have had over 50 per cent of the plants infested.

BIBLIOGRAPHY

Crop Production by Hughes and Henson (*Macmillan Co.*, 1930, 816 pp.) is of great interest to the student in the classroom, the man on the farm or as a handy reference text for those wishing a source of ready information regarding crop problems. The writers have made available in a summary form much of the important data in the field of crop production collected by agricultural research workers. One interesting feature of the text is that the writers have furnished available research data in relation to crop problems without drawing definite conclusions. The book has been used successfully as a text where the problem method of teaching has been followed.

ENTOMOLOGY

By E. PORTER FELT

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PLANT QUARANTINE AND CONTROL

European Corn Borer.—The Plant Quarantine and Control Administration has revised a number of regulations during the past year, notably those in relation to the European corn borer. These deal mostly with

additions to territory in the two-generation regulated area and the removal of restrictions on the shipment of ear corn from the one-generation to the two-generation area.

Japanese Beetle.—The Japanese beetle quarantine regulations, issued May 26, modified the plan of classi-

fication of nurseries, greenhouses and other premises concerned in the movement of nursery and ornamental stock.

Gypsy and Brown-tail Moth.

—The gypsy and brown-tail moth regulations, issued May 27, modified restrictions on the shipment of Christmas trees and greenery, forest plant products, stone and quarry products and nursery stock from infested areas. They clarify the definition of restricted articles and authorize the recognition of valid state nursery inspection certificates.

Sterilization and Disinfection.

The Administration issued May 1, 1931, a series of regulations in relation to the sterilization and disinfection treatments of plants and plant products subject to inspection. The fumigation of berries with ethylene oxide and bananas in carload lots with hydrocyanic acid gas was authorized, effective July 14, as an adequate safeguard against the distribution of the Japanese beetle. Cotton fumigation rules were modified for Texas and New Mexico.

The Mediterranean fruit fly, as compared with 1930, has required relatively little attention, and although the citrus groves of Florida have been watched closely throughout the season, no infestations of the Mediterranean fruit fly have been detected. The Plant Commissioner of the State of Florida presents, in the *Monthly Bulletin* of the State Plant Board for March, 1931, a detailed history of the campaign for the suppression of this pest as conducted during 1929 and 1930.

INSECT DEPREDACTIONS

The Japanese beetle continues to be one of the important introduced insects in the eastern United States. Widely isolated infestations were discovered at Cleveland and Columbus, Ohio, and Charleston, S. C. The insect was also found in both Somerset and Worcester Counties, Maryland, at Richmond, Va., at Pittsburgh and Erie, Pa., at Little Falls, Watkins Glen, Fort Edwards, Albany and Buffalo, N. Y., and in a number of Con-

necticut localities. The probabilities are that a number of these localities will be brought under quarantine regulations before next spring.

Grasshoppers.—The grasshopper outbreak in the Great Plains area was the most serious of any since the historic devastations of the Rocky Mountain locust in 1868 and 1888. There were several species of grasshoppers involved. The injury was reported as very serious in many parts of Utah, practically all agricultural crops suffering.

The elm leaf beetle has been unusually abundant in southern New England, New York, New Jersey south to Maryland and westward to Ohio. An estimate made the past season indicated that some 1,300,000 elms were stripped of leaves or practically defoliated by this insect. The major injury was in cities and towns where no adequate provision had been made for the protection of the trees. This serious damage to shade trees was increased by the work of the Japanese beetle, which defoliated approximately 250,000 trees and the European willow leaf beetle, which destroyed the foliage of practically all many willows, making a total of one and three-quarter million trees seriously injured the past season by three introduced insects.

The European corn borer has extended its range during the past season. There has been a marked increase in the numbers of the pest, approximately tenfold, in an area south of Toledo, Ohio, a considerable increase in Chautauqua County, N. Y. and also in the New York territory bordering on Lake Ontario. There has been a very great increase in populations of Jefferson County, N. Y., and in some places the loss was estimated at 75%. Serious injury has also been reported from Long Island. There has been a spread of the two-generation race into New Jersey. Infestations have been discovered in Virginia, Kentucky, southern Indiana and eastern Wisconsin. The spread is mostly southwesterly and the insect is now close to the corn belt.

Gypsy Moth.—There has been no marked change in the situation, although there was somewhat extensive stripping of woodland areas in southeastern Massachusetts. The outstanding feature is the probable extermination of an earlier extensive infestation in New Jersey, nothing having been found since early 1929. The area will be closely watched another season.

Mexican Bean Beetle.—This invader from the southwest is a comparatively recent comer in southeastern New York and southern New England. It has been exceedingly abundant and injurious in this area, many fields having the foliage practically destroyed with serious injury to total loss of the crop.

Army Worm.—There was a serious outbreak of the army worm reported from eleven north central Texas Counties.

UNUSUAL ITEMS

Insects Shipped by Airplane.—A shipment of parasitic insects by airplane was made May 8 from Peru to Florida. The insects came through in excellent shape. This is probably the first instance of a commercial shipment of insects by air.

Moth Film.—A clothes moth film entitled "Why Moths Leave Home" was prepared by the Government and is now available for use.

Ethylene Gas As a Fumigant.—A public service patent was granted to two governmental employees on ethylene oxide as a fumigant, and through this action the free use of this material has been secured for the American public.

Rotenone as an insect poison has been intensively studied by a number of investigators, since there is a possibility of finding in this material a valuable aid in the war against insects.

PERSONNEL

Dr. L. O. Howard, formerly Chief of the U. S. Bureau of Entomology, later Senior Entomologist, retired from government service June 30. He was a recipient this summer of the Capper gold medal for distinguished

service to agriculture and an award of \$5000.

J. E. Graf resigned from the Bureau of Entomology March 5 to become Associate Director of the U. S. National Museum.

S. A. Rohwer was appointed Assistant Chief of the Bureau of Entomology April 1.

Avery S. Hoyt was appointed Assistant Chief of the Plant Quarantine and Control Administration June 9.

R. W. Harned of Mississippi, was appointed Head of the Cotton Insect Research Work of the Federal Bureau of Entomology, effective June 19.

NECROLOGY

Dr. James H. Emerton, a widely known authority on spiders, died Dec. 5, 1930.

George G. Ainslie of Tennessee, a student of grass-eating insects, died Dec. 19, 1930.

Dr. James S. Hine, well known for his studies of the horse flies, *Tabanidae*, and the dragon flies or *Odonata*, died Dec. 22, 1930.

John Henry Comstock, widely known as a successful economic entomologist and particularly as a teacher for many years and an author of a number of classical works, died March 20, 1931.

Ferdinand F. Crevecoeur, an amateur entomologist of Kansas, died April 7.

A. C. Morgan, Clarksville, Tennessee, an economic entomologist, died July 28.

Dr. Henry L. Viereck, a widely known specialist on the Hymenoptera, died at Loudonville, O., Oct. 8.

TEXTS AND MONOGRAPHS

There have been a number of desirable additions to the permanent literature of entomology. *The Insect Menace* by Dr. L. O. Howard will be widely read, not only because the author is well known, but on account of the exceedingly interesting story which he has put in easily understandable English. *The Demons of the Dust* by William Morton Wheeler is an able discussion of insects occurring under extreme desert conditions. *The Butterfly Book* by Dr. W. J.

Holland, dean of entomologists, is a completely revised and much enlarged edition of his earlier popular work. It is noteworthy because of the beautifully colored figures of almost every known American species. In many cases the illustrations were reproduced directly from types and paratypes.

The historical phases of entomology have come in for unusual attention. *A History of Applied Entomology* by Dr. L. O. Howard is a delightful account of the development of official entomology, especially those phases of it closely related to the work of the Division of Entomology, now the Bureau of Entomology, of the U. S. Department of Agriculture. *A History of Entomology* by E. O. Essig was written primarily as a history of West Coast activities. It is a monumental contribution to our knowledge of entomological developments in that section of the country. *Thomas Say, Early American Naturalist* by H. B. Weiss and Grace M. Ziegler is a delightful, sympathetic, authentic biography of this early American naturalist. *The Bureau of Entomology and The Plant Quarantine and Control Administration*, both service monographs, by Gustavus A. Weber are comprehensive accounts of the history and development of these two very important governmental agencies. *Common Pests* by R. W.

Doane is a general account of insects and other animals of economic importance. *Insects, Ticks, Mites and Venomous Animals of Veterinary and Medical Importance*, Part I Medical, by W. S. Patton and A. M. Evans, and Part II Public Health, are both of great interest to Entomologists and public health workers.

More limited fields in entomology are represented by the following: *Recent Advances in Entomology* by A. D. Imms, a summary of the more recent developments in morphology, ecology, parasitism and biological control in particular. *A Contribution to Knowledge of Florida Odonata* by C. Francis Byers. *The Plant Lice or Aphididae of Illinois* by Frederick Hottes and Theodore H. Frison, is a monographic work published as a *Bulletin* of the Illinois Natural History Survey.

There are several works of special interest to students. *Laboratory Guide to the Study of Wings of Insects* by J. Chester Bradley and *The Venation of Insect Wings*, are both laboratory guides. *A Manual of the Genera of Beetles* by J. Chester Bradley was written particularly to facilitate the separation of the genera of beetles. *Histological and Illustrative Methods for Entomologists* by H. Eltringham, although an English author, contains much of value for the American student.

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

(For further information, the reader may address the following organizations)

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| AMERICAN ASSN. OF ECONOMIC ENTOMOLOGISTS, Melrose Highlands, Mass. | ETY, Bureau of Plant Industry, Washington, D. C. |
| AMERICAN ASSN. OF MUSEUMS, 2 W. 46th St., New York City. | AMERICAN SOCIETY OF NATURALISTS, University of Pennsylvania, Philadelphia, Pa. |
| AMERICAN NATURE ASSN., Lakewood, N. J. | AMERICAN SOCIETY OF ZOOLOGISTS, University of Minnesota, Minneapolis, Minn. |
| AMERICAN NATURE STUDY SOCIETY, Cornell University, Ithaca, N. Y. | BOTANICAL SOCIETY OF AMERICA, Cornell University, Ithaca, N. Y. |
| AMERICAN ORNITHOLOGISTS' UNION, 1939 Biltmore St., N. W., Washington, D. C. | ENTOMOLOGICAL SOCIETY OF AMERICA, 1900 Race St., Philadelphia, Pa. |
| AMERICAN PHYTOPATHOLOGICAL SOCI- | EUGENICS RESEARCH ASSOCIATION, Cold Spring Harbor, New York. |

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

NATIONAL ASSN. OF AUDUBON SOCIETIES, 1974 Broadway, New York City.

NEW YORK MICROSCOPICAL SOCIETY, American Museum of Natural History, New York City.

NEW YORK ZOOLOGICAL SOCIETY, 101 Park Ave., New York City.

PALEONTOLOGICAL SOCIETY OF AMERICA, American Museum of Natural History, New York City.

REPTILE STUDY SOCIETY OF AMERICA, INC., 108 Convent Ave., New York City.

ZOOLOGICAL SOCIETY, 101 Park Ave., New York City.

DIVISION XXIII

MEDICAL SCIENCES

PHYSIOLOGY

BY PERCY G. STILES

HARVARD MEDICAL SCHOOL

HORMONES AS AGENTS OF THE NERVOUS SYSTEM

Evidence is constantly being secured which tends to show that the association indicated in this phrase is frequently met with. Impulses travel from the brain and cord to certain organs, cellular activities are initiated, and active substances—internal secretions—are distributed by the circulating blood. Effects may be produced in the most remote localities. One example of such a sequence has long been known, the release of a drug-like principle from the adrenal body as a result of stimulation originating in the nerve-centers. Other instances have been established more recently.

A familiar experiment in the physiological laboratory consists in arresting the beat of the heart in the frog or the turtle by exciting the vagus nerve. It has now been demonstrated that the effect of the nerve upon the heart consists first in the liberation of a chemical compound which has a paralyzing influence on the contracting tissue. Technically speaking we say that an "inhibitory hormone" is set free. Proof of this is afforded by the fact that washings from the interior of a heart under vagus restraint have a distinctly depressing effect upon a second heart through which they are passed.

Within a year or two an analogous case has been cited. The quickening of the heart which accompanies excitement or muscular activity has usually been referred to direct nervous

action or to the discharge of the adrenal hormone. These factors can be excluded by severing the nervous connections of the heart and also those of the adrenals. Animals survive these operations in good condition. Excitement and struggle are found still to induce an acceleration of the heart, less marked than in the normal and somewhat delayed in development. Much experimentation was required to discover the source of the phenomenon. When one possibility after another had been excluded it was found that the substance stimulating the heart had been produced in the so-called smooth muscle widely distributed through the body.

The division of the nervous system which regulates the activities of smooth muscle (the contractile component of the alimentary canal, the blood vessels, the skin, etc.) is often called the sympathetic. It is known to come in play when the organism has to mobilize its resources for an emergency. It has power to increase the rate and force of the heart both by direct action upon it and through release of the adrenal principle. The newer studies enable us to say that another hormone, likewise a cardiac stimulant, can be liberated by the cells of smooth muscle. In recognition of the nervous mechanism determining its production it is proposed to call this substance *sympathin*.

RESUSCITATION FOLLOWING ELECTRIC SHOCK

The common cause of death in

VITAMINE A

The number of compounds deserving to be designated as vitamins may sometime be much larger than at present. For quite a while there has been no addition to the established list which has remained fixed at five or six. Among these the body known as "A" has been less easy to characterize than the others; statements about its utility have been rather indefinite. It has been described as a promoter of growth and lack of it has frequently been observed to result in a serious inflammation of the eyes. The impression has prevailed that an adequate supply of Vitamine A increases an animal's resistance to infection.

A review of the facts has encouraged the generalization that this vitamin has a particular relation to the welfare of the epithelial tissues. If the integrity of the skin suffers in consequence of its absence from the diet, infecting organisms may well penetrate with greater freedom. The secreting cells of the various glands are classed as epithelial. If the want of Vitamine A impairs their powers we can understand how a reduced flow of tears may lead to abnormal conditions in the eye. The salivary glands are said to be injured in a similar way.

SKELETAL MUSCLE

Studies of the chemistry and physics of muscular activity continue to be reported in large volume. In general it may be said that the result has been to make the matter appear more complex and difficult of analysis. The older conceptions of what happens when a muscle responds to stimulation are not swept away but they require to be supplemented at certain points. An elementary statement of these occurrences has usually been something like the following. In the excited muscle the neutral carbohydrate glycogen is changed to lactic acid. This is the agent which actually causes the shortening or tension observed. Relaxation requires the removal of the acid by chemical reaction or dispersion.

It has now been announced that

cases of electrocution is a form of heart failure. This consists in what is called fibrillation: the regular, coördinated beat is succeeded by a diffuse and localized writhing of the heart muscle which does not drive the blood upon its course. Unless the normal heart action can be promptly restored the brain will be fatally injured. The aim is to stop the heart entirely for the moment since there is hope that after such a standstill it may resume orderly and efficient contractions.

A method making use of the above principle has been applied with some success to dogs. When the heart is fibrillating a salt solution is injected toward the organ by way of an artery, that is, counter to the proper direction of flow. This solution contains a relatively high content of potassium, compounds of which inhibit the heart. Arrest having been secured the first injection is followed by a second having a low percentage of potassium and a relative excess of calcium. It is intended that this mixture shall expel the former one from the blood vessels of the heart and initiate a normal beat. The replacement of potassium by calcium is favorable to such a result.

EMOTION AND BLOOD FAT

For twenty years the fact has been known that excitement is followed by a rise of the blood sugar. A possible service connected with this reaction has been inferred: namely, that provision is made for a liberal supply of fuel to the muscles. An emotional crisis is an occasion for strenuous action and such an adjustment would seem to be timely. It is only very recently that investigators have shown that under such circumstances the fat as well as the sugar of the blood may be markedly increased. The significance may be the same in both cases; fat may be appropriated by the muscles and utilized as a source of energy. Injection of adrenalin into the circulation is found to raise the fat of the plasma as it has long been known to increase the sugar.

under the influence of a drug (mono-iodo-acetic acid) the formation of lactic acid in stimulated muscle may be entirely prevented. Still such a muscle is capable of doing work though the scale of its performance is reduced. Contraction without lactic acid is seen to be a possibility and the older theories must be modified to take this into account. It is curious to find that two more or less independent mechanisms exist in muscle and it will be interesting to discover the particular circumstances which determine the relative extent of their employment.

"WIRE-TAPPING IN THE NERVOUS SYSTEM"

The passage of each impulse along a nerve is featured by a momentary electrical change, a fluctuation of potential which can be detected by delicate instruments. Thus the facts of function and rhythm in nerve-trunks can be demonstrated. Physiologists working in this field have profited much by the use of apparatus primarily designed for the radio. Within a year or two a surprising application of such technique has been made in connection with the auditory nerve. Light has been thrown on a question raised in the last century: Does the ear reproduce in its nerve a frequency corresponding to the pitch of musical notes stimulating this sense-organ?

The experimental procedure includes first the destruction of the cerebrum of the animal. This makes it possible to dispense with the anæsthetic and go on without the suggestion of cruelty. The eighth cranial nerve containing the fibers which mediate hearing is next exposed. Upon it are set the electrodes which are to pick up the tell-tale currents. These are in circuit with amplifying devices of great power and through them with a telephone. The arrangements being completed it is found that a tone employed to stimulate the ear of the cat may be recovered from the nerve. It would seem that the original vibration rate has been reduplicated in the procession of nerve-impulses. Not only sustained and simple notes but

complex fusions like those of speech may be reproduced.

There seemed to earlier workers to be a serious objection to the so-called "telephone theory" of hearing. This was the consideration that fibers cannot recover quickly enough after the passage of an impulse to accommodate themselves to the frequencies which characterize high pitches. Without denying this we may still find a way to explain the representation of these rapid rhythms in the auditory nerve. The number of the fibers is large and they may not "keep step." If the impulses are not synchronized but alternating in the different channels we can easily see how the electric pulses which we tap off the nerve may pass along in a far quicker succession than would be possible with a single conductor.

THE KIDNEY

Certain new and interesting suggestions have been made in regard to the complex activities of this organ. It will be recalled that the unit of structure is a relatively long tubule heading in a "Capsule of Bowman." This last is closely applied to a capillary cluster, the glomerulus. The conception most in favor is to the effect that the secretion is primarily derived from the glomeruli and that it is modified during its passage through the tubules. The change may be due in part to processes of absorption and in part to further secretory activities of the tubule cells.

For some years it has been known that the glomeruli in the kidneys of various animals show alternate periods of action and rest. At one time blood flows through their capillaries, then they appear to close and suspend the movement. It is now pointed out that such interruptions may have a definite functional value. When the glomerulus at the place of origin of a tubule ceases to secrete, the minute column of liquid in the tubule must become stationary. This is just the condition needed to permit the interaction of cells and secretion. Time is afforded for the establishment of an equilibrium which it

might otherwise be impossible to attain. A recent writer shows that an increase in the working time of the glomeruli at the expense of their rest periods must release an abnormally copious and dilute secretion. An abnormality such as this may underlie the disorder known as diabetes insipidus.

THE ADRENAL CORTEX AND TEMPERATURE REGULATION

The fact that the adrenal bodies are necessary to life has long been known. Within two or three years preparations made from the outer

layer (cortex) of these small organs have been found greatly to prolong the survival of animals from which the adrenals have been removed. A paper just published emphasizes one feature of this relationship; the connection between the cortical material and the ability to withstand exposure to cold. The body temperature of animals deprived of the adrenals is readily depressed. Their susceptibility to chilling is associated with a subnormal rate of oxidation. When such animals receive the standard product (cortin) their resistance to cold is raised nearly to the normal.

PATHOLOGY

BY A. J. MILLER

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HYPERTENSION

The pathology of hypertension evidently has, in some instances, been shown to be located in the arterioles of various tissues; among them the skeletal muscle, lungs and brain. The physiological mechanism is protective in nature. That is to say that if the blood supply to certain tissues is diminished by vessel damage which occludes the lumen of vessels the cardio-vascular system responds by elevating the blood pressure in order to force more blood through the small lumina and keep the tissues nourished. It is not determined as to just how this change is brought about. Two mechanisms seem possible. One is that the lack of oxygen, or the waste products of metabolism or that some special tissue hormone stimulates afferent nerves which influence the pressor system to elevate the blood pressure. The other mechanism is similar except that the stimulating substance, waste products or a tissue hormone, is carried by the blood stream to the muscle in the heart and vessels and affecting them directly or that the nerve mechanism is affected in such a way as to keep the pressure high. It seems true that ischemia of the brain, possibly only the medulla

oblongata, and the skeletal muscle will result in such a response.

The nature of the process which affects the arterioles is not known except to say that it is essentially hyperplasia of the connective tissue of the intima and media, especially the former. It is accompanied by practically no degenerative or other destructive processes which might help to explain the hyperplasia. The process differs markedly from the usual arteriosclerosis by the absence of destructive processes. Our knowledge of idiopathic hypertension is advanced to the extent that its presence is partially explained. Its prevention and cure are still not revealed.

NEOPLASMS

The great disease which is so much dreaded because of its common occurrence and often fatal results has still eluded the searchers for truth. It seems there is no progress in our knowledge of this condition by which we might remember the year 1931.

HODGKIN'S DISEASE

At the present time, and for many years past, the character of Hodgkin's disease is in dispute. It is believed by many that the peculiar

growth is due to some parasite which having invaded the lymph nodes causes a peculiar type of hyperplasia. The other view indicates that the growth is neoplastic in character and that it is derived from the lymph nodes. Medlar has recently pointed out the great similarity of this lesion to the bone marrow and especially to some pathological conditions of the marrow. There are in Hodgkin's disease the same changes in the marrow as found in the lymph nodes. The type cell he indicates as megakaryocyte. The histology then is a "Pleomorphic aggregation of cells which represent the developmental cycle of the megakaryocyte." The involvement of tissues outside of the bone marrow is, then, evidence of metastasis. Megakaryoblastoma is the name given to this lesion. This view has not been generally approved,

but there are indications that it will be and, if true, satisfies the conditions of Hodgkin's disease better than any explanation offered heretofore.

DEATH OF DR. WARTHIN

This year marks the passing of one of the foremost pathologists of this country, Aldred Scott Warthin, who died May 23, 1931. Dr. Warthin was 64 years old. He will be remembered for many valuable contributions to the literature, some of which are not strictly concerning his chosen specialty. There is one physical sign that bears his name, an accentuated aortic sound resulting from hypertension, is called Warthin's sign. The subject which commanded most of his interest was syphilis, especially of clinically obscure conditions. In Dr. Warthin's passing the profession has suffered irreparable loss.

MEDICINE

By RUSSELL L. CECIL

ASSISTANT PROFESSOR, CORNELL UNIVERSITY

and

NORMAN PLUMMER

INSTRUCTOR, CORNELL UNIVERSITY

LABORATORY PROGRESS

Most of the recent progress in medicine and therapeutics has come by way of the experimental laboratory. Many great medical discoveries have their origin at the bedside of the patient, as the physician attempts to understand the disease process in order to conquer it and to relieve the suffering which it causes, but this primary concept must be carried to his workshop, the experimental laboratory, to be developed into concrete form by the careful use of scientific methods, before it is found to be practical, or proved to be useless. During 1931 a number of important laboratory discoveries have been made, and some of these, as well as others previously reported, have been

brought to the point of clinical application.

At this time last year, it was reported that the active chemical principle of liver extract had been discovered. Since then, the clinician has found that this potent fraction can be used to great advantage by parenteral injection in pernicious anemia. About the same time, it was demonstrated experimentally that the common cold is caused by a filtrable virus. This laboratory achievement has not yet reached the stage of practical significance. During the year, an extract of the cortex of the suprarenal gland has been prepared which shows striking curative effect in Addison's disease. An enzyme has been developed that has proved efficacious in the treatment of pneumococcus in-

fection in animals, but this work has not yet advanced to the clinical stage. The vitamins have again been the subject of extensive investigation. Within the last month, English scientists have at last isolated the active chemical constituent of the vitamin D preparations, and studies on vitamin A have progressed to almost the same point, through the recognition of the close relation of carotene to this vitamin.

ADDISON'S DISEASE

One of the most remarkable of the year's discoveries is that of an effective treatment for Addison's Disease. This condition formerly presented a hopeless outlook, because of its invariably fatal termination. Fortunately, however, it occurs infrequently. The symptoms and autopsy findings in this disease point strongly to involvement of the suprarenal glands. These two glands which are located in the abdominal wall just above the kidneys seem quite insignificant. They are very small,—never larger than a lima bean. Nevertheless, the removal of these minute organs causes death within a few days. The anatomists demonstrated, many years ago, that the suprarenal glands were composed of two different types of tissue, an outer cortex and an inner medulla. An extract prepared from the medullary portion, called epinephrin (adrenalin), produces a very definite effect on the blood pressure and smooth musculature when injected into the body. It is an important therapeutic agent, particularly in such conditions as asthma and circulatory failure. However, epinephrin produces no effect on the course of Addison's Disease; neither does it retard nor prevent death in animals following the removal of the suprarenal glands. Recently, two groups of investigators, working independently—Pfiffner and Swingle, at Princeton, N. J., and Hartman, Brownell, and Hartman, at Buffalo,—have prepared extracts from the cortex of the suprarenal gland. Injection of these preparations prevents death in suprarenalectomized animals. Already

Rowntree and his co-workers have obtained excellent clinical response in a number of cases of Addison's Disease treated with this extract.

ENZYME TREATMENT OF PNEUMONIA

Since 1913, pneumonia has been divided into a number of types (type I, type II, type III, group IV), according to the specific strain of the pneumococcus causing the infection. An effective therapeutic serum is available for the treatment of type I and type II pneumococcus pneumonia, but none has yet been discovered for type III, which remains the most fatal of the different types. However, a new form of treatment has been devised which already has given remarkable results in type III pneumococcus infection in animals. A new field was opened by the investigative work of Avery, Heidelberger, and Goebel when they divided the pneumococcus into its chemical fractions and found the capsule of the organism to be soluble in water, to be, apparently, the toxic and type specific constituent, and, by chemical analysis, a complex polysaccharide. Recently, Avery and Dubos have made an extensive search for a substance that would destroy this toxic capsular fraction. They examined a great variety of moulds, yeasts, and soil bacteria which were known to decompose cellulose. Finally, in a cranberry bog in New Jersey, they found one particular organism which was capable of splitting the polysaccharide fraction of the type III pneumococcus. Further studies showed that this remarkable power is due to an enzyme elaborated by this organism. This enzyme is specific for this one polysaccharide, having no effect on that of the other pneumococci. Its action is exhibited in the test tube and on the microscopic slide, where the dissolution of the capsular substance occurs. These investigators, in addition, have been able to protect mice from type III infection by the parenteral injection of this enzyme. These striking discoveries are most encouraging, and

we await with extreme interest their clinical trial.

VITAMINS

Development of Knowledge.—In recent years, the vitamins have become more and more important in the prophylaxis and treatment of certain diseases. As early as the 16th century, it was known that scurvy could be prevented by including in the diet an unknown substance contained in certain sour juices, particularly lemon juice. Japanese observers, in the latter part of the 19th century, noted that people living on a diet of polished rice were subject to beri-beri, but that this condition could be avoided by using the entire kernel or adding a portion of barley.

Classification.—In 1912, Hopkins demonstrated that there was a marked difference in the growth curve of a group of rats fed on an artificial mixture of proteins, fats, and carbohydrates only, and a corresponding group given the same mixture with milk added. From this experiment they assumed that milk contained a food factor not present in the artificial mixture. A few years later these accessory food factors were named vitamins. They have been classified as follows:—

Vitamin	Solvent	Results of Deficiency
A	Fat	Improper growth. Xerophthalmia.
B ₁	Water	Improper growth. Polyneuritis.
B ₂	Water	Pellagra.
C	Water	Scurvy.
D	Fat	Rickets.
E	Fat	Sterility in either sex.

Vitamin A.—Within the past year, further detailed information on the subject of the vitamins has been acquired. Vitamins A and D have been given particular attention. The results of experiments on animals by Boynton and Bradford and by other investigators strongly suggests that the deficiency of vitamin A is a factor in lowered resistance to infections. A study of the pathology of vitamin A deficiency indicates that there are definite transformations in the various epithelial layers and that, probably, in this way the defense mechanism of the body is weakened. The source of vitamin A has been quite definitely determined. This vitamin has been found to be closely related to the yellow pigment carotene,—in fact, the two may be identical. It has been suggested that vitamin A occurs as the pigment carotene in the vegetable kingdom, and in a clear state in the animal body. The original source of vitamin A in cod liver oil is probably the chlorophyllaceous diatoms which are ingested by the crustaceans and larval forms, while they, in turn, become the food of the codfish.

Vitamin D.—Research in vitamin D has progressed to a still more advanced stage. Within the last month, English investigators have prepared a crystalline substance from irradiated ergosterol which has the highest vitamin activity of any yet obtained. Perhaps it is the crystalline form of vitamin D and, if so, this discovery is the culmination of many years of investigation.

PHARMACOLOGY

By HARRY GOLD

ASSISTANT PROFESSOR, CORNELL MEDICAL COLLEGE

NARCOTIC ADDICTION

Notwithstanding the numerous studies of the opium alkaloids, our knowledge of these drugs is still very fragmentary. A committee on narcotic addiction of the National Research Council, under the chairman-

ship of W. C. White, has been engaged in an extensive program to study the problem of addiction. The work was divided into three phases: (1) a systematic analysis of the pharmacological literature; (2) a chemical investigation of new opium alkaloids,

and (3) pharmacological studies of these new substances. Under the auspices of the committee there have appeared in the *Journal of the American Medical Association*, during the past year, a series of articles dealing with the indispensable uses of morphine and its allies, with the view of directing attention of the physician to the part that he can play in controlling addiction by limiting the use of morphine only to those conditions in which it is essential.

GINGER PARALYSIS

In the early part of 1930 an epidemic of paralysis broke out in the western and southwestern states, which was traced to the consumption of the fluid extract of Jamaica ginger as a beverage. Maurice I. Smith and his co-workers of the United States Public Health Service made an intensive investigation and succeeded in discovering that the paralysis was due to adulteration of the ginger with about 2 per cent of tri-ortho-cresyl phosphate (*Public Health Reports*, No. 1419, October, 1930). They studied several phenolic esters and found that only the phosphoric acid ester of ortho-cresol produced in certain species of animals the specific paralysis seen in man poisoned by the ginger preparations. Soon after these facts became known, the consumption of these preparations ceased, and that epidemic came to an end. The importance of this contribution can be better appreciated when one realizes that thousands of people fell victims of paralysis as the result of this adulteration.

CORPUS LUTEUM HORMONE

The observations made independently by Cushny and Dale in 1906, that stimulation of the hypogastric nerve in the cat causes relaxation of the non-pregnant uterus and contraction of the pregnant uterus, was utilized by Van Dyke and Gustavson (*J. Pharm. and Exp. Therap.*, 37: 379, 1929) in interesting experiments to study the action of various extracts of the uterus and ovary. They showed that the hormone elaborated by the corpus luteum is responsible for the

pregnancy reversal phenomenon. They tested the response of the uterus to hypogastric nerve stimulation after the injection of follicular-liquid extracts, placental extracts, extracts of ovarian residue, uterus, fetus, and early and late vascularized corpora lutea. None of these reversed the reaction of the non-pregnant uterus. A contraction of the uterus simulating the reaction that occurs in pregnancy was obtained, however, in kittens after watery or lipoidal extracts of mature corpora lutea had been injected. In a subsequent report (*J. Pharm. and Exp. Therap.*, 41: 139, 1931) they brought forth further evidence that the corpus luteum was responsible for the pregnancy reversal. They injected urine of pregnant women (the urine containing oestrin and "anterior pituitary hormone") into normal and spayed cats. It was found that the uterus behaved like a pregnant one only after luteinization had been produced by the injections, that in the spayed cat the uterus relaxed when the nerve was stimulated. Relaxation also occurred in the animal in which luteinization had not taken place after the injections even though the ovary was intact. The hypertrophy of the uterus following the injections occurred independently of the corpus luteum hormone. That the corpus luteum plays an important role in pregnancy has been known for a long time. These experiments, however, throw light from another angle on the part played in pregnancy by this hormone.

TOLERANCE TO NITRITES

The wide use of the nitrites in the treatment of hypertension and the relief of cardiac pain, makes the question of tolerance to these drugs a matter of considerable importance. This is particularly true in the case of cardiac pain because in this condition a tablet of nitroglycerin may be required several times daily during the course of many years. It has been known for a long time that workers in gun powder factories suffer headaches and other disagreeable symptoms from the inhalation of nitroglycerin fumes, but after exposure

to them for a week or longer, tolerance is developed so that further exposure to the usual quantities no longer produces these disagreeable symptoms. The tolerance is, however, not of long duration, and after so short a period as two or three days susceptibility may again be restored. For this reason workers in this industry are known to place some of the drug in their hatbands during the days when they are absent from the plant in order to retain their tolerance (Ebright, 1914). From time to time, publications have appeared indicating that tolerance may be acquired for some members of the group of "nitrites" and not to others. The recent paper by Crandell, Leake, Loevenhart, and Muehlberger (*J. Pharm. and Exp. Therap.*, 41:103, 1931) is of considerable interest in this connection. They showed that tolerance is produced in man by widely different members of this group of drugs, although they were unable to produce any considerable tolerance to sodium nitrite; that of the substances which they examined, tolerance was most readily developed by the use of amyl nitrite and least readily with erythrol tetranitrate, but that tolerance established to one member of the group, applies to others as well. It is well to bear in mind, therefore, that when the patient ceases to show the blood pressure fall after one of the nitrites, the rational procedure is to discontinue its administration for a few days, in order to reestablish susceptibility rather than to turn to some other members of the group to continue to obtain effects.

SODIUM THIOSULPHATE IN MERCURY POISONING

In the past five or six years, the injection of sodium thiosulphate has become an almost routine measure in the treatment of mercury poisoning. This treatment became popular chiefly as the result of the experimental work of Dennie and McBride (1924). They believed that the thiosulphate acted by rendering more soluble and excretable the mercury tightly bound up in a protein radical.

Several clinical reports also indicated a favorable effect of thiosulphate in poisoning by bichloride of mercury. There were, however, some dissenting opinions. Haskell, Henderson and Hamilton (1925) concluded from their experiments that the course of mercury poisoning was unaffected by sodium thiosulphate. The more recent study by Young and Taylor (*J. Pharm. and Exp. Therap.*, 42:185, 1931) adds further strong evidence in favor of the view that practically no reliance can be placed on this drug in the treatment of mercury poisoning. They found that, with the exception of an apparently slight beneficial effect in the case of mercuri-tetra-iodide, sodium thiosulphate did not decrease the toxicity of the mercury compounds in terms of single lethal doses, repeated sub-lethal doses, or in terms of the degree of tissue injury and rise of blood non-protein nitrogen. While it is important not to overlook any agent that may be useful, it is equally important, particularly in the treatment of mercury poisoning, to avoid losing time by the use of substances that are not helpful.

THEORY OF NARCOSIS

Beutner (*J. Pharm. and Exp. Therap.*, 42:258, 1931) has advanced an interesting electrical theory of narcosis which helps to explain certain hitherto puzzling facts relating to the action of narcotics. It is based upon the work of R. S. Lillie showing that conduction is a traveling wave of electrical polarization. He has tested out this theory by measurements on artificial systems resembling tissue in their electromotive properties. According to this theory the drug stimulates by producing a local area of negativity, which together with the adjacent positive pole results in a local circuit, and the flow of current, reversing the polarity, causes the traveling of the negativity. In low concentrations, the drug produces moderate negativity along the course of the nerve, and this results in the well known phenomenon of increased irritability in cathelectro-

tonus. A stronger negativity or cathelectrotonus, resulting from higher concentrations by electromotive interference, however, blocks impulses and leads to narcosis, because now no further negativation can arise which is strong enough to start a local circuit. This theory attempts to explain the facts underlying the observations of Meyer and Overton, namely, that narcotic action of drugs is related to their penetrability into the oily phase of the tissue substance. It is this penetration which permits them to produce the electrical negativity.

EFFECT OF BARBITURIC ACID COMPOUNDS ON THE INTESTINES

The wide use of barbital and its derivatives as sedatives and hypnotics, and their effectiveness for these purposes, have concentrated attention upon these actions almost to the exclusion of other actions of these drugs. Isolated observations have been made from time to time that the use of these drugs results in constipation. The action causing constipation, although desirable under

most conditions, may be made use of in special cases in which there is intestinal spasm. Thus Barker has recommended phenobarbital for the relief of spasm in the treatment of peptic ulcer. Experiments on isolated strips of intestine have usually shown relaxation and diminished peristalsis under the influence of the barbiturates. Interesting confirmation of these results has now been obtained by the experiments of Gruber and his coworkers (*J. Pharm. and Exp. Therap.*, 42:27, 1931) on the intact intestine in non-anesthetized dogs. The intravenous injection of fairly large doses of phenobarbital produced prompt loss of tone in a Thirty-Vella loop of intestine in these dogs. The doses were much larger than those used in man, but on the other hand, man is more susceptible to these drugs than the lower animals. Hence it is probable that these experiments explain, in part at least, the antispasmodic and constipating action of these drugs. In any event, they are important in directing attention to these actions of the barbiturates.

SURGERY

BY FRANK L. MELENEY

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ANAESTHESIA

Spinal Anaesthesia.—The advance of surgery during 1931 has been of a general rather than of a specific nature. The greatest advances have been in the fields of anaesthesia, of surgery of the sympathetic nervous system and of prophylaxis against the risks of operation. Progress has been made in the more exact determination of the indications for and the technique of spinal anaesthesia and likewise in the more extensive use of avertin as a basal anaesthetic.

In 1927 a questionnaire was sent out by Dr. Edward Stanton to several hundred representative American surgeons to determine if possible, how

extensively spinal anaesthesia was used. Six hundred, twenty-two surgeons answered the questionnaire and 419 or 68% said that they did not use spinal anaesthesia. In contrast to the above is a report of Dr. Richard Cranmer and Dr. Early Henrikson who sent out a questionnaire to 500 members of the American College of Surgeons located in twenty large cities of the United States covering every section of the country. The names were taken at random from the bulletin of the American College of Surgeons. Seventy-nine per cent of those who replied stated that there were using spinal anaesthesia and 83% said that its use had increased in their

community during the past few years. Although it is used by some surgeons for thoracic and neck operations, the majority of anaesthetists consider spinal anaesthesia to be dangerous in such cases because of the possibility of paralysis of the nerves of the muscles of respiration, both voluntary and involuntary.

The chief advantages of spinal anaesthesia are the avoidance of an inhalation anaesthetic, the complete relaxation of the abdominal musculature and the contraction of the intestines. The last two characteristics make abdominal operations easier and quicker. According to many writers one of the chief indications for spinal anaesthesia is intestinal obstruction because of its effect on the gut.

The chief contra-indications of spinal anaesthesia seem to be abnormally high or abnormally low blood pressure for in the great majority of cases the administration of spinal anaesthesia is followed by a fall in blood pressure. Patients with hypotension are more liable to go into shock and patients with hypertension are more likely to develop a thrombosis of the cerebral blood vessels or a suppression of urine than normal individuals.

Use of Avertin.—Running parallel with the increased use of spinal anaesthesia and perhaps over-taking it in its speed of general acceptance has been the use of avertin, which within five years of its discovery has very rapidly come into general use. Attempts to produce complete anaesthesia with avertin are now considered to be dangerous, but it has found a place as a basal or basic anaesthetic which is not only safe but eminently satisfactory both to the patient and to the surgeon. In the great majority of cases the dose should not be more than 70-100 milligrams per kilogram of body weight. Then it must be supplemented with either infiltration or inhalation anaesthesia, but when these are used, very much smaller quantities are necessary than if they are given alone and the usual periods of excitability

both in the induction of and recovery from the inhalation anaesthetics, largely, if not entirely absent.

Certain precautions are necessary in the preparation of avertin. It should only be given by one thoroughly acquainted with the technique, not only of preparation but of testing for the presence of irritating ingredients. Within a few minutes after administration the patient falls off into a deep sleep and although he may return to consciousness within an hour after the administration of the supplementary anaesthetic, he goes into a second period of drowsiness which may last for two days. After this period, which is ordinarily fairly uncomfortable following an operation, the patient may have very little recollection of the events of those two days.

In many surgical conditions such as toxic goitre and in many individuals in anticipation of any operation (and this applies particularly to children) there is a very great psychical shock immediately preceding and during the induction of most anaesthetics. This is not true of avertin for here the induction is almost identical with the natural onset of slumber. It has been given to many patients without their knowledge, and subsequent operations have been done upon them without their knowledge or realization until many hours or several days after it is all over and they are well on their way to recovery. One anaesthetist who has reported its use in over 1500 cases emphasizes its utility in operations on the larynx, cauterization of the tongue, intranasal operations, operations done during acute alcoholism, in thyroid and in children's surgery, or when a general anaesthetic is distasteful to the patient. Most writers agree that practically the only contra-indications to its use are diseases of the liver, or kidneys and ulcerated conditions of the rectum or colon. Avertin has also been used with excellent results in manic states and has been used to control the spasms or convulsions of tetanus and eclampsia.

SURGERY OF THE SYMPATHETIC SYSTEM

There has been for some years a growing appreciation of the influence of the sympathetic system on vascular tone and the implication of the sympathetics in such diseases as Raynaud's disease, thrombo-angiitis obliterans, arteriosclerosis and chronic arthritis. Surgical treatment of these diseases has been attempted with the purpose of removing the tonic influence of the sympathetic nerves. In the past the results have not been consistent but recently it has been made possible by simple procedures, to determine the rôle played by the sympathetics in any given case by noting the effect of blocking the action of the sympathetic by spinal or local anaesthesia. In those cases in which there is an improvement in the color and temperature of the part due to a dilatation of those blood vessels not effected by obliteration or unyielding stiffening, a permanent removal of the sympathetic nerves may be expected to permit the development of a collateral circulation which may be sufficient for the nourishment of the diseased part. In a number of clinics throughout the country these problems have been taken up seriously and are being studied by groups of doctors each one being interested in the problem from a different point of view. Many cases of thrombo-angiitis obliterans and arteriosclerosis fail to show any improvement with these tests but so far, very encouraging results have been obtained in those cases in which arterial spasm plays a leading rôle and in which a preliminary determination of the sympathetic nervous control has been made. This seems to give a *rationale* for the proper selection of the cases suitable for this treatment which has not been available in former years to any great extent. There are a number of pioneers in this field of surgery whose work will bear watching for it is a field which offers many possibilities of development.

PROPHYLAXIS AGAINST THE RISKS OF OPERATIONS

Study of Complications.—During the past few years there has been an increasing interest in the complications that may follow operative procedures. These are responsible for many unexpected or accidental fatalities, or for failure to achieve the purpose of the operation. A study of these complications and an understanding of them is necessary in order that the risks of operation may be minimized. Among these complications, the most important are: shock, pulmonary disorders, circulatory failure, infection, disruption of the wound, intestinal obstruction and hemorrhage. There is an increasing interest on the part of surgeons throughout the country to minimize these complications by more thorough preliminary determinations by physical examination or laboratory tests of the functional condition, and the margin of safety of the various systems of the body. If any abnormalities are found, they are corrected in so far as it is possible, and supportive measures are used and every precaution taken to guard against any serious break in the function of the disabled organs.

Pulmonary.—To forestall pulmonary complications more care is being used to avoid elective operations in the presence of, or shortly following, upper respiratory infections. Careful consideration is given to the choice of the anaesthetic so as to avoid the irritating effect of inhalation anaesthesia in the presence of any abnormal irritation or inflammation of the respiratory tract. There has been an increasing use of carbon dioxide after operation in an attempt to minimize the possibilities of the development of lung collapse and pneumonia, which are favored by a decrease in the vital capacity of the lungs, particularly during operation on the upper abdomen when pain or respiratory sedatives limit deep respiration. There seems to be a general consensus of opinion among anaesthetists and surgeons that the administration of

carbon dioxide after operation increases the depth and rate of respiration and thus not only favors aeration of the lungs but favors the expulsion of the contaminated mucous which has been aspirated during anaesthesia.

Circulatory.—Where there is danger of circulatory failure, the administration of fluids before and during operation as well as after operation has become increasingly frequent and a greater appreciation of the blood chemistry has given a *rationale* of treatment. Transfusion of blood has been used with greater frequency as a prophylactic rather than a last resort measure in cases of operative shock. In large cities there has been an increasing use of organizations whose purpose it is to examine and supply healthy donors of blood who can be available on very short notice.

Sterilization.—Constant efforts are being made to minimize operative wound infection by the limitation of those factors which are known to be implicated. Not only must the elaborate system of sterile technique be maintained but contamination from supplies not properly sterilized—linen, instruments, catgut, etc., contamination from the noses and throats of operators and nurses, and contamination by air organisms must be pre-

vented or minimized to the *nth* degree.

Abdominal Treatment.—The temporary paralysis of the gut following abdominal operations is still a most distressing source of trouble,—affecting the normal passage of intestinal contents, limiting respiration and bringing undue tension on the abdominal wound. The vomiting which is frequently caused by this condition, likewise strains the abdominal wound, frequently causing a disruption. The prophylactic treatment of post-operative distention has not been as successful as surgeons would like to have it, and they have been faced with the necessity of treating it after it has developed. However, studies along this line are encouraging and in the next few years we should be able to look forward to some success in this field. Recent reports on the use of extract of the posterior lobe of the pituitary gland given both before and immediately after operation offers some encouragement. It seems probable that the greatest progress in surgery in the next few years will be in the field of minimizing the risks of operations so that both patient and surgeon may look forward to the success and safety of operative procedures with increasing confidence.

DENTISTRY

BY HOUGHTON HOLLIDAY

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QUESTIONS OF EDUCATION

Criticism.—The intense conscious criticism which dental educators have fomented within the dental profession is focussing attention on the fact that in this age of reconstruction and reorganization in all fields of thought, dentistry cannot remain content to use inadequate methods of education. By following too closely in the footsteps of Medicine, Dentistry has occasionally fallen into error. Endeavor

to render a service must begin with a survey of the need for such service. Through an economic system which says every man for himself, the social aspects have been crowded more and more into the background, and the needs have been forgotten.

Hierarchal Tendencies.—There is even a tendency toward a professional hierarchy. Large fees are extorted from the rich, presumably that the poor may have service below cost

and those who refuse to place themselves in one or the other category are simply left out of the equation. However, the public has not suffered alone. The dentist, too, is a victim of an ever more complex educational system. The increasing length of the dental course, with an even greater increase in its cost, has greatly aggravated these evils, until the burden has become greater than the public is able or willing to bear.

Results of Complex Courses.—

It is not strange that there is a growing sentiment against still further extending the course of training. There was a mathematics professor who insisted on teaching navigation to all of his students on the grounds that one never knows when he may have need of a particular bit of knowledge. Possibly some one of his students may some day find himself at sea in a boat which has suddenly been bereft of officers and crew, and perhaps he may be able to recall enough of what he learned to bring himself safely to port. However, the possibility is too remote to justify the expenditure of time on the part of all the students passing through the professor's hands. Dentistry, like Medicine, had added many courses in "Navigation," which ultimately and if given to the right individuals, might result in great good to humanity. They are of little value however, to a group fitting itself to go out and care for the present ills. The longer, more complex course has not produced better operators, but it has greatly increased the cost of dentistry to both dentist and patient. There seems to be a growing feeling that a shorter undergraduate course with graduate courses in various fields to train leaders in research and teaching, from among those capable and desirous of, going into such work, would result in dentistry meeting the present and future needs much more adequately.

Problems of Training.—There are many who feel that it is now time to shorten and alter the undergraduate course in an effort to reduce the cost of dentistry to a point where

more people can avail themselves of the service. Yet it is important that the undergraduate training be so shaped that the graduate, so inclined, can continue his studies along some particular line to fit himself for scientific research or for teaching. The additions to the dental curriculum have been entirely from the field of medicine, but it seems quite possible that special studies in other fields as well might ultimately lead to a better fulfillment of the needs in the field of dentistry. These subjects, however, should be pursued by graduate students and should not, as at present, be loaded onto a highly specialized course. We have broadened, deepened, lengthened the undergraduate course until the final product is so costly that he can be approached by only the few. Of course the graduate work which is being proposed is expensive, but it will be undertaken by a small minority, and in view of the social aspects of such work, when handled in a truly scientific fashion, it should make a successful appeal for endowment and should merit state support.

DENTAL RESEARCH AND STUDIES

Laboratory Work.—In view of the fact that dentistry, as now taught, produces a negligible number who are competent to do truly scientific research, it is encouraging to note that many of the medical science laboratories are taking hold of dental problems, which fall within their respective domains. Medicine for a long time has ignored these problems, but with the shift to teaching the dento-medical subjects more and more in the medical schools under the medical faculty, interest has been aroused in dento-medical problems. A number of institutions are now launched upon projects which the dental schools have long wanted attached, but which they were unable to man or finance. Prominent among the schools now carrying on such work are: Johns Hopkins University, University of Rochester, Columbia University, University

of Toronto, University of Michigan, University of California, and the University of Chicago. The medical schools are the proper places for the carrying on of this work, and it is hoped that in the future, graduate students in Dentistry will be working in their laboratories earning their Masters or Doctors of Science degrees in Dentistry.

Journals.—Another step in the evolution from trade journalism is the launching of a new journal to be added to the list of non-trade dental publications, the *American Journal of Periodontology*. For some years, the profession has been following medicine in an effort to eliminate the miserable trade prospectuses or supply house catalogues that formerly dominated the field. How well the effort has succeeded is evidenced by the quality of the *Journal of the American Dental Association*, *Journal of Dental Research*, and the *International Journal of Orthodontia and Oral Surgery*. The new publication should be a valuable addition, and will doubtless serve as a medium for the more scientific articles in the field of Periodontology which could not claim space in the *Journal of the American Dental Association*, which is obliged to emphasize articles of value and interest to the general practitioner.

Study of Trench Mouth.—Among the outstanding studies reported during the year is that of Richard D. Dean, B.S., Eng., D.D.S., M.D., and Marguerite T. Dean, B.S., M.D., on Clinical Manifestations of Fusospirochetel Infections. The fusospirochetel organisms are found in oral lesions and are clinically diagnosed as Vincent's infection or trench mouth. Up to the World War the disease was encountered but rarely. During the war, it was very prevalent and there has been a marked increase in the incidence of the disease from that time to the present. Its rapid spread to almost epidemic proportion has caused extensive study into the nature of the disease and the characteristics of the organisms associated with

it. The work in progress by the Deans of the College of Dentistry, University of Tennessee is especially meritorious.

Dental Practice.—Progress is being made by the Committee on the Study of Dental Practice. This committee was created by the American Dental Association to assist the Committee on the Cost of Medical Care. As the program of the Committee on the Cost of Medical Care developed, it became very evident that the task was too large for a single organization. Various organizations were asked to coöperate in making certain of the studies. The Committee on the Study of Dental Practice is accordingly engaged in studying certain economic factors in the life of dentists. This study is being made under the following topics: 1. The cost of dental education; 2. The cost of equipping a dental office; 3. The practice of dentistry and the income of dentists; 4. dental clinics in the United States, and 5. A study of health insurance systems. The profession has been circularized to secure desired data, and the committee's first report shows to what measure the members have gone to make their work of real value. The vast amount of statistical material has been carefully analyzed and assembled.

Insurance Systems.—A review of the studies of insurance systems for medical and dental care by A. M. Simons and Nathan Sinai, reveals that this movement is gaining ground throughout the world. There is no uniformity in the systems in the various countries nor between the various schemes being tried within any one country. There does seem to be a tendency for the voluntary systems to become compulsory. The entire question is in a state of flux and evolution, but is advancing with accelerating speed. Some of the problems which are being faced are: political domination, fees, lay control, freedom of choice of practitioner, inadequate treatment and malingering with demoralization of the working classes. Some of the systems seem to have

been organized on the basis of emotionalism and the results are alike unsatisfactory to patients and doctors. Some advocated it only for the poorer classes. Before this country adopts any such measures, a careful study should be made in an effort to avoid the evils which are elsewhere too prevalent. The Committee on the Study of Dental Practice has under-

taken such a study as one of its functions, and as the allotted budget was inadequate, the American College of Dentists took over the financial responsibility of gathering the data. It is anticipated that this study will play a major rôle in the deliberations of the Committee on the Costs of Medical Care when that body meets in 1932 to formulate its final conclusions.

PUBLIC HEALTH AND HYGIENE

By IRA V. HISCOCK

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THE WHITE HOUSE CONFERENCE

The Reports.—During 1930, throughout the United States, workers in every field that relates to the well-being of children made generous contributions of their time and knowledge to the White House Conference on Child Health and Protection, held in Washington, November 19-22, 1930 and February 19-22, 1931. The reports of the Conference occupy several volumes and cover Medical Service, Public Health Service, Education and Training, and The Handicapped: Prevention, Maintenance, and Protection.

The Children's Charter, which was an outgrowth of the conference, outlines 19 aims, the last of which is perhaps the most significant of all,—“To make everywhere available these minimum protections of the health and welfare of children, there should be a district, county, or community organization for health, education, and welfare, with full-time officials, coördinating with a state-wide program which will be responsive to a nation-wide service of general information, statistics, and scientific research. This should include: (A) Trained, full-time public health officials, with public health nurses, sanitary inspection, and laboratory workers; (B) Available hospital beds; (C) Full-time public welfare service for the relief, aid, and guidance of children in special need due to pov-

erty, misfortune, or behavior difficulties, and for the protection of children from abuse, neglect, exploitation, or moral hazard.” (*White House Conference Reports*, Century Co., New York.)

NEW YORK STATE COMMISSION

Scope of Study.—During the past year the field of public health administration in New York State was the subject of an intensive study by a commission appointed by Governor Roosevelt. This was a significant step in view of the changes in the theory and practice of public health since 1913 when a similar study was made and important recommendations were enacted into law. The commission reviewed the progress made since 1913, analyzed existing needs, and suggested a program for future years.

Legislative recommendations included the following: requirement that health officers appointed in cities of more than 50,000 population shall devote their full time to the duties of their office, the establishment of state district tuberculosis sanatoriums, the centralization of responsibility for administering certain state institutions, the creation of a division of cancer control as an extension of cancer research functions, and the provision of adequate facilities for the treatment of the venereal diseases. The commission expressed its belief that the substitution of the county for the town and village unit in health ad-

ministration, and the replacement of part time, poorly trained health officers by full time, qualified personnel is fundamental to further health progress.

State Aid For County Service.

—In connection with a state-wide system of county health departments with full time health officers, it is noteworthy that the new health program includes state aid to the extent of half of the cost of such service, to insure that the qualifications of personnel and standards of service meet the requirements of the state department of health. (*J. A. M. A.* Sept. 12, 1931, Vol. 97, No. 11, p. 763.)

POLIOMYELITIS

An unusual prevalence of poliomyelitis was experienced in several states in 1931. The outbreak first became apparent in Brooklyn, New York, and spread first along the Northeastern seaboard. The New England and Middle Atlantic States showed the highest incidence over the previous two years, but the East North Central States were also affected. A large proportion of the cases were hospitalized and early treatment was instituted. It is anticipated that the analysis of results of various forms of treatment used will throw some light on this important question.

SUPERVISION OF MILK AND MILK PRODUCTS

Pasteurization.—Increasing attention is being given to the methods of safeguarding milk supplies, and a few cities have adopted universal pasteurization. The reports of the White House Conference, among others, have emphasized the importance of clean and sanitary milk production followed by the additional safeguard of pasteurization. Improvements have been made in the design of automatic control and safety devices for pasteurizers and interest in high temperature pasteurization has been revived. The more recently installed electrical type, high temperature—short time, holding pasteurizers, when

operated under certain conditions and under certain temperature and time requirements, have been found to be dependable, reliable and of equal efficiency to the commonly used holding type of apparatus. (C. A. Holquist, *Proceedings, Twentieth Annual Convention, International Association of Dairy & Milk Inspectors*, 1931, Montreal.)

Ice Cream.—The ice cream industry during the past two years has made progress in the sanitation and control of the product. The time ageing the ice cream mix has been reduced from 24 hours to from two to four hours. It has been shown that the ice cream mix may be pasteurized at temperatures up to 170°F. The higher temperature decreases the size of the fat globules and viscosity, improves the whipping quality, but does not materially affect the flavor, texture or body of the product. Increasing the pasteurizing temperature and shortening the ageing period both reduce the bacteria content in the finished product. Several states have passed laws establishing a maximum bacteria content for ice cream. (C. W. Fabian, Annual Meeting, American Public Health Association, Montreal, 1931.)

INDUSTRIAL HYGIENE

Asbestos Dust.—The effect of inhalation of asbestos dust upon primary tuberculous infection has been the subject of an experimental investigation covering two and one-third years. The dust employed when dry is a light, fluffy, gray-white, stringy substance, composed of short fibers and irregular particles. Guinea-pigs have been exposed for eight hours daily for the period to an atmosphere containing approximately 35,000,000 particles per cubic foot of asbestos dust 1.5 microns and less in diameter. Rabbits and albino rats were exposed for 330 days. Fibrous structures as long as 200 microns were found to pass the protective mechanism of the upper respiratory tract and enter the lung. Anatomic evidence of injury to this mechanism is wanting. Pri

VITAL STATISTICS

mary tuberculous infection is influenced only to a limited degree by inhaled asbestos. Asbestosis bodies are not present in asbestos dust previous to contact with animal tissues. They are produced by oxidation and hydrolysis of the chrysotile molecule. The formation of these structures is the first direct evidence that the body is capable of effecting changes in inhaled silicate particles. The combined action of asbestos dust and tubercle bacilli in the lung produced more fibrosis than did either agent acting independently. (*J. Indus. Hyg.*, Vol. XIII, No. 2, Feb. 1931, p. 65.)

RURAL HYGIENE

Public Health Needs.—The outstanding lesson revealed by a comprehensive evaluation in 1931 of the Cattaraugus County, New York, health program is the urgent importance, the great difficulty and the high cost of adequate health service for rural communities. There is increasing realization, however, that the major problem of public health service is the extension of the facilities of modern medical science to the rural areas, so that health may come to the farm dweller at least as fully as it has come to the tenement-dweller

during the past 25 years. A complete urban health program has proved itself, according to the report, just as practical, just as essential, and just as fruitful among the hills and valleys of western New York as in the tenements of a great city. It has also been shown that there are problems of rural social service as pressing and as far from solution as those of public health, while the wide field of mental hygiene opens up new opportunities.

Resources.—Against these needs must be balanced resources. Nearly one-third of the rural counties of the United States have per capita incomes of less than \$250 per year and over two-thirds have incomes falling below \$500 a year. It is this limitation which accounts for the fact that, of some 2,500 rural counties in the United States, only 500 have any form of organized health service, only about fifty have budgets and personnel of any reasonable adequacy, while perhaps a dozen have health organizations comparable with those considered essential in a city. The one way out of this difficulty is said to be state aid. (C.—E. A. Winslow, *Health on the Farm and in the Village*, Macmillan Co., N. Y., 1931.)

VITAL STATISTICS

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FEDERAL STATISTICS

Registration Areas.—Federal mortality and birth statistics are compiled for only that part of the United States known as the "death registration area" and the "birth registration area." (Mortality Statistics and Birth, Stillbirth, and Infant Mortality Statistics—annual reports—published by the Bureau of the Census.) A "registration area" is that portion of the United States recognized by the Federal Government as having adequate registration laws, and at least 90 per cent com-

plete registration. In 1930 the death registration area included 47 states, the District of Columbia, the Territory of Hawaii, the Virgin Islands, and 8 registration cities in non-registration states, or 96.2 per cent of the total population, while the birth registration area, composed of 46 states, the District of Columbia, the Territory of Hawaii, and the Virgin Islands, included 94.7 per cent of the total population. The following tables show the state growth of these two areas:

XXIII. MEDICAL SCIENCES

STATES IN DEATH REGISTRATION AREA

State	Year	State	Year	State	Year
Massachusetts.....	1880	Ohio.....	1909	Nebraska.....	1920 ¹
New Jersey.....		Minnesota.....	1910	Georgia ⁷	1922
District of Columbia ²		Montana.....		Idaho.....	
Connecticut.....	1890	North Carolina ³		Wyoming.....	
Delaware ³		Utah.....	1911	Iowa.....	1923
New Hampshire.....		Kentucky.....		North Dakota.....	1924
New York.....		Missouri.....		Alabama.....	1925
Rhode Island.....		Virginia.....	1913	West Virginia.....	
Vermont.....		Kansas.....	1914	Arizona.....	1926
Maine.....	1900	North Carolina ³	1916	Arkansas.....	1927
Michigan.....		South Carolina.....		Georgia ⁷	1928
Indiana.....	1900	Tennessee.....	1917	Oklahoma.....	
California.....	1906	Illinois.....	1918	Nevada.....	1929
Colorado.....		Louisiana.....		New Mexico.....	
Maryland.....		Oregon.....		South Dakota.....	1930
Pennsylvania.....	1906	Delaware.....	1919		
South Dakota ⁴		Florida.....			
Washington.....	1908	Mississippi.....			
Wisconsin.....					

¹ Census year.² Included in States.³ Dropped from the area in the census year 1900.⁴ Dropped from the area in 1910.⁵ Included only municipalities having a population of 1,000 or more in 1900.⁶ The remainder of the State of North Carolina was added to the registration area in 1911. (See note 5.)⁷ Dropped from the area in 1925 when States Registration Law was declared unconstitutional. Under a new law, the State was readmitted in 1928.

Death Rates.—The death rate of the registration area for 1929 was 11.9 per 1,000 estimated population. Of the 1,386,363 deaths which occurred in the death registration area in 1929, more than 61 per cent were due to eight causes: Diseases of the heart, influenza and pneumonia, cancer, nephritis, cerebral hemorrhage and softening of the brain, tuberculosis, bronchitis and broncho-pneumonia, and diabetes mellitus. The death rate from accidents (excluding automobile accidents) declined from 60.9 per 100,000 population in 1927 to 57.6 in 1929, but the death rate from automobile accidents (excluding collisions with railroad trains and street cars) increased from 10.4 to 23.3.

VITAL STATISTICS

DEATH REGISTRATION AREA: 1880-1930

Year	Estimated Population, July 1, of Continental United States	Registration Area in Continental United States					
		Estimated Population, July 1		Land Area		Deaths from All Causes ¹	
		Number	Per Cent of Total	Square Miles	Per Cent of Total	Number	Rate per 1000 Population
1930	123,191,000	118,560,800	96.2	2,711,615	91.2	1,343,358	11.3
1929	121,526,429	116,317,515	95.7	2,634,743	88.6	1,386,363	11.9
1928	119,861,607	114,258,516	95.3	2,402,433	80.8	1,378,675	12.1
1927	118,196,785	103,177,568	91.5	2,274,398	76.5	1,236,949	11.4
1926	116,531,963	104,938,301	90.1	2,221,892	74.7	1,285,927	12.3
1925	114,867,141	102,951,999	89.6	2,108,072	70.9	1,219,019	11.8
1924	113,202,319	100,082,062	88.4	2,091,456	70.3	1,173,990	11.7
1923	111,537,497	97,816,104	87.7	2,021,237	68.0	1,193,017	12.2
1922	109,872,675	93,866,240	85.4	1,965,589	66.1	1,101,863	11.7
1921	108,207,853	89,102,434	82.3	1,726,012	58.0	1,032,009	11.6
1920	106,543,031	87,632,592	82.3	1,726,012	58.0	1,142,558	13.0
1919	105,003,065	85,166,043	81.1	1,649,281	55.5	1,096,436	12.9
1918	103,587,955	81,333,675	78.5	1,546,166	52.0	1,471,367	18.1
1917	102,172,845	74,984,498	73.4	1,349,629	45.4	1,068,932	14.3
1916	100,757,735	71,349,162	70.8	1,307,819	44.0	1,001,921	14.0
1915	99,342,625	67,095,681	67.5	1,228,704	41.3	909,155	13.6
1914	97,927,516	65,813,315	67.2	1,228,644	41.3	898,059	13.6
1913	96,512,407	63,200,625	65.5	1,147,039	38.6	890,848	14.1
1912	95,097,298	60,359,974	63.5	1,106,777	37.2	838,251	13.9
1911	93,682,189	59,183,071	63.2	1,106,734	37.2	839,284	14.2
1910	92,267,080	53,831,742	58.3	997,978	33.6	805,412	15.0
1909	90,691,354	50,870,518	56.1	765,738	25.7	732,538	14.4
1908	89,073,360	46,789,913	52.5	725,117	24.4	691,574	14.8
1907	87,455,366	43,016,990	49.2	603,151	20.3	687,034	16.0
1906	85,837,372	41,983,419	48.9	603,066	20.3	658,105	15.7
1905	84,219,378	34,052,201	40.4	212,744	7.2	545,533	16.0
1904	82,601,384	33,345,163	40.4	212,744	7.2	551,354	16.5
1903	80,983,390	32,701,083	40.4	212,762	7.2	524,415	16.0
1902	79,365,396	32,029,815	40.4	212,762	7.2	508,640	15.9
1901	77,747,402	31,370,952	40.3	212,770	7.2	518,207	16.5
1900 ²	75,994,575	30,765,618	40.5	212,621	7.1	539,939	17.6
1899 ²	75,994,575	28,807,269	37.9	176,878	5.9	512,669	17.8
1890 ²	62,947,714	19,659,440	31.2	90,695	3.0	386,212	19.6
1880 ²	50,155,783	8,538,366	17.0	16,481	0.6	169,453	19.8

¹ Exclusive of stillbirths.

² Census year ending May 31.

Birth Rates.—The birth rate of the birth registration area in continental United States for 1930 was 18.9, the same as for 1929 (see THE AMERICAN YEAR BOOK, 1930). The death rate for the birth registration area was 11.3, indicating the rate of natural increase for 1930 to be 7.6.

XXIII. MEDICAL SCIENCES

BIRTH REGISTRATION AREA: 1915-1930

Year	Birth Registration Area in Continental United States								
	Population ¹		Land Area		Births ²		Deaths ²		Death of Infants under 1 Year of Age Per 1,000 Live Births
	Number	Per Cent of United States Total	Square Miles	Per Cent of United States Total	Number	Rate Per 1,000 Population	Number	Rate Per 1,000 Population	
1915	30,936,179	31.1	292,860	9.8	776,304	25.1	436,593	14.1	100
1916	32,788,670	32.5	302,801	10.2	818,983	25.0	486,682	14.8	101
1917	54,771,416	53.6	794,819	26.7	1,353,792	24.7	776,222	14.2	94
1918	55,515,241	53.6	794,819	26.7	1,363,649	24.6	996,627	18.3	101
1919	61,483,423	58.6	1,075,506	36.2	1,373,438	22.3	798,104	13.0	87
1920	63,740,689	59.8	1,152,314	38.7	1,508,874	23.7	836,134	13.1	86
1921	70,738,177	65.4	1,209,224	40.7	1,714,261	24.2	825,511	11.7	76
1922	79,415,841	72.3	1,508,946	50.7	1,774,911	22.3	938,545	11.8	76
1923	80,694,406	72.3	1,508,946	50.7	1,792,646	22.2	992,237	12.3	77
1924	86,256,025	76.2	1,689,576	56.8	1,930,614	22.4	1,006,994	11.7	71
1925	87,486,096	76.2	1,683,103	56.6	1,878,880	21.5	1,030,518	11.8	72
1926	89,682,479	77.0	1,880,267	63.2	1,856,068	20.7	1,093,511	12.2	73
1927	103,575,656	87.6	2,139,894	72.0	2,137,836	20.6	1,176,805	11.4	65
1928	113,050,663	94.3	2,402,186	80.8	2,233,149	19.8	1,361,987	12.0	69
1929	115,097,972	94.7	2,634,510	88.6	2,169,920	18.9	1,369,757	11.9	68
1930	116,644,000	94.7	2,634,510	88.6	2,203,895	18.9	1,321,369	11.3	64

¹ Estimated July 1.² Exclusive of stillbirths.

STATES IN BIRTH REGISTRATION AREA

Year	State	Year	State	Year	State
1915...	Connecticut	1917...	Ohio	1924...	Florida
	Maine		Utah		Iowa
	Massachusetts		Virginia		North Dakota
	Michigan		Washington	1925...	West Virginia
	Minnesota	1919...	Wisconsin		
	New Hampshire		California	1926...	Arizona
	New York		Oregon		Idaho
1916...	Pennsylvania		South Carolina ³		
	Rhode Island ¹	1920...	Nebraska	1927...	Alabama
	Vermont				Arkansas
	Dist. of Columbia ²	1921...	Delaware		Louisiana
1917...	Maryland		Mississippi		Missouri
	Indiana	1922...	New Jersey		Tennessee
	Kansas			1928...	Colorado
	Kentucky		Illinois		Georgia
	North Carolina		Montana		Oklahoma
			Wyoming	1929...	Nevada
					New Mexico

¹ Dropped from the registration area in 1919; readmitted in 1921.² Included in registration States.³ Dropped from the registration area in 1925; readmitted in 1928.

Infant Mortality Rates.—The 1930 infant mortality rate (deaths of infants under 1 year of age per 1,000 live births) was 64, or 4 lower than the corresponding rate for 1929. This rate for 1930 is the lowest rate since the establishment of the area in 1915, being one lower than the record low rate for 1927 which was sixty-five.

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

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(For further information, the reader may address the following organizations)

- ALLIANCE AGAINST FOOD FRAUD, 300 Madison Ave., New York City.
- ALLIED DENTAL COUNCIL, 425 Lafayette St., New York City.
- AMERICAN ACADEMY OF APPLIED DENTAL SCIENCES, 587 Fifth Ave., New York City.
- AMERICAN ASSN. FOR MEDICAL PROGRESS, 370 Seventh Ave., New York City.
- AMERICAN COLLEGE OF SURGEONS, 40 E. Erie St., Chicago, Ill.
- AMERICAN GYNECOLOGICAL SOCIETY, 104 S. Michigan Ave., Chicago, Ill.
- AMERICAN HEART ASSN., Inc., 370 Seventh Ave., New York City.
- AMERICAN INSTITUTE OF HOMEOPATHY, 393 Seventh Ave., New York City.
- AMERICAN LARYNGOLOGICAL ASSN., 1811 Spruce St., Philadelphia, Pa.
- AMERICAN LARYNGOLOGICAL RHINOLOGICAL AND OTOLOGICAL SOCIETY, Inc., 145 W. 58th St., New York City.
- AMERICAN MEDICAL ASSN., 2 E. 103rd St., New York City.
- AMERICAN OCCUPATIONAL THERAPY ASSN., 175 Fifth Ave., New York City.
- AMERICAN OPHTHALMOLOGICAL SOCIETY, 2213 Walnut St., Philadelphia, Pa.
- AMERICAN OSTEOPATHIC ASSN., 844 Rush St., Chicago, Ill.
- AMERICAN PHYSIOLOGICAL SOCIETY, Rockefeller Institute, New York City.
- AMERICAN SOCIETY FOR THE CONTROL OF CANCER, 25 W. 43rd St., New York City.
- AMERICAN SOCIETY OF CLINICAL PATHOLOGISTS, 256 Metropolitan Bldg., Denver, Colo.
- AMERICAN SOCIETY OF TROPICAL MEDICINE, Box 131. Pa. Ave. Station, Washington, D. C.
- AMERICAN VETERINARY MEDICAL ASSN., 716 Book Bldg., Detroit, Mich.
- ASSN. OF AMERICAN MEDICAL COLLEGES, 25 E. Washington St., Chicago, Ill.
- ASSN. OF MILITARY SURGEONS OF THE U. S., Army Medical Museum, Washington, D. C.
- EDWARD L. TRUDEAU FOUNDATION FOR RESEARCH AND TEACHING IN TUBERCULOSIS, Saranac Lake, N. Y.
- GORGAS MEMORIAL INSTITUTE, 1598 Madison Ave., New York City.
- NARCOTIC DRUG CONTROL LEAGUE, Inc., 40 Wall St., New York City.
- NATIONAL LEAGUE FOR NURSING EDUCATION, 370 Seventh Ave., New York City.
- NATIONAL TUBERCULOSIS ASSN., 370 Seventh Ave., New York City.
- NEW YORK ACADEMY OF MEDICINE, 2 E. 103rd St., New York City.
- NEW YORK ACADEMY OF SCIENCES, 77th St. and Central Park West, New York City.
- OSTEOPATHIC AID ASSN., 103 Park Ave., New York City.
- PUBLIC HEALTH COMMITTEE, 2 E. 103rd St., New York City.
- ROCKEFELLER FOUNDATION, 61 Broadway, New York City.
- SOCIETY OF AMERICAN BACTERIOLOGISTS, Cornell University, Ithaca, N. Y.
- SOCIETY OF MEDICAL JURISPRUDENCE, 2 E. 103rd St., New York City.
- SOUTHERN MEDICAL ASSN., Empire Bldg., Birmingham, Ala.
- UNITED BOARD OF HEALTH CONTROL, Inc., 233 Broadway, New York City.
- UNITED HOSPITAL FUND, 105 E. 22nd St., New York City.
- UNITED STATES HAY FEVER ASSN., Bethlehem, N. H.

DIVISION XXIV

PHILOSOPHICAL AND SOCIAL SCIENCES

PHILOSOPHY

By A. A. ROBACK

LECTURER, UNIVERSITY EXTENSION, COMMONWEALTH OF MASSACHUSETTS

GENERAL

Exposition.—What to include in a philosophical survey is becoming increasingly difficult to determine, as authors leave the technical path of the past and undertake expeditions into various fields adjoining the philosophical territory. Our first step will be to indicate the dominant tendency in American philosophy in 1931. Perhaps it will not be so easy to adjudge the matter in terms of the traditional systems and schools. There has been surprisingly little written within the last two years in the way of a plea for or defence of realism or idealism as such. Philosophers are still inclined one way or another but they prefer to touch on such problems casually. For this reason it will be *zweckmässiger*, as the Germans say, to discover which of the subsidiary disciplines contributed most in quality as well as in quantity, and from which approach, "the science of sciences" attracted the majority of its articulate votaries. There can be no question that the chief interest, judging from the subject matter of books in the entire domain, lay in the relationship between science and philosophy, methodology. Logic, too, which has claimed of late the most prominent place in the philosophical sphere has received its due share.

Themes.—Perhaps the greatest gain for the year has been in religious books of a philosophical nature or philosophical books of a religious nature. Ethics seems to have held

its own at least in the quality of the publications if not in the number. *Æsthetics* was represented but meagerly in the number of publications while metaphysics still continues to draw its slight nourishment from Catholic sources. To begin with the general treatises, introductions to and defences of philosophy we must record the popularly written *The Enduring Quest* by H. A. Overstreet (Norton) in which the author in his search for a philosophy of life stresses the pragmatist view; *viz*, the "true reality is the synthesis of all possible points of view" and not merely the patronage of a single point of view. Furthermore, the philosophical test of any course is its actability. In a booklet apparently written for Babbitts inclined to poke fun at the first of all disciplines, R. H. Perry gives the reader a taste of the philosopher's delight. In *A Defence of Philosophy* we find many an entertaining story interwoven with the expository material.

TEXTBOOKS

The drop in the number of textbooks for the year may be explained in various ways. Perhaps it has been found that a new text is not necessarily the best, and that the classics in philosophy are not large enough to make textbook writing a lucrative occupation, but each of the texts that were published during 1931 has a worthy place in the book economy whether it be B. A. G. Fuller's *Greek Philosophy*, Vols. II and III or the

excellent *Fundamentals of Philosophy* (Prentice-Hall, XII + 761) by W. S. Gamertsfelder and D. L. Evans, or D. S. Robinson's *Anthology of Modern Philosophy* (Crowell, XIII + 836) which is a judicious selection from the works of 32 major philosophers between the 16th and 20th centuries. A valuable feature of the compilation is the series of prefatory analyses, biographical paragraphs and bibliographical notes. Gamertsfelder and Evans' text is the most comprehensive and up-to-date which has yet appeared in English, alluding frequently to the individual views of American philosophers. Other texts in specific fields will be listed in connection with the disciplines of which they treat.

COLLECTED PAPERS

Charles S. Peirce.—A philosophical event of outstanding importance is the publication of the first volume of C. A. Peirce's *Collected Papers*, entitled *Principles of Philosophy* (Harvard University Press, XVI + 393). So far, six volumes have been prepared for the press, but it is expected that others will follow. There are philosophical writers living to-day whose earlier essays are stale and evaporated as compared with the suggestive and ever fresh observations of Peirce. Whether he writes on the history of science, or the logic of mathematics, or the qualities of feeling, there is always a new angle which he brings to bear upon the problem. The most interesting portion of the whole book, because the most human, is his revealing preface, which presents an autobiographical fragment of the man, as well as a silhouette of his creed. This volume alone will do much to establish Peirce's position as the greatest of American philosophers. The following volumes will deal with symbols, logic, probability, the foundations of mathematics, pragmatism and metaphysics.

Dewey.—Another volume of collected papers, all but one previously published, is *Philosophy and Civilization* (Minton Balch) by John Dewey. Most of the articles which constitute the volume are of historic importance

as the essay on pragmatism. Some are a bit out of date, e.g. the paper on the reflex arc, but the last chapter "Science and Society" seems to have topical interest, for the plea in it is to make the best of the depression period in which we are living so as to learn to avert further universal catastrophies of this sort. In the vein of Emerson, Dewey exhorts the present generation to hope and to work. The first scientific revolution is still to come, "It will ensue when men collectively and coöperatively organize their knowledge for application to achieve and make secure social values." Evidently Dewey does not think that the theory of relativity with all its implications in allied fields is of sufficient moment.

Philosophical Miscellany.—One of the most important books of the year in philosophy is the collection of papers (for the most part already published) by M. R. Cohen entitled *Reason and Nature* (Harcourt Brace). Cohen has covered a vast field of knowledge from law to physics and psychology to mathematics. In his illuminating preface, the author foretells any labelling of his philosophy by claiming to be a rationalist, an irrationalist, a mystic, an idealist and a realist all at once. The survey of philosophical tendencies is thorough in its critical analysis, but we miss the unity and constructive trend which one would expect in a more systematic work, planned chapter by chapter.

BIOGRAPHY

Probably because of the general interest in biography of late, there has been an unusual activity along biographical lines. The fifteenth centenary of Augustine's death occasioned the symposium, by M. C. D'Arcy, Blondel, Gilson, Maritain and others entitled *A Monument to St. Augustine* (Dial). G. Harkness has epitomized the life of John Calvin in his *John Calvin, The man and his Ethics* (Holt). Among other philosophers' lives we have H. Robinson's *Bayle the Sceptic* (Columbia University), with a considerable bibliography; R. R. Ergang's *Herder*

and the Foundations of German Nationalism (Columbia University); B. Stern's, *Lewis Henry Morgan, Social Evolutionist* (Chicago University); V. J. McGill's *Schopenhauer, Pessimist and Pagan* (Brentano); and S. A. Raemer's *America's Foremost Philosopher* (St. Anselm's Priory). From the title, the reader would hardly surmise that the subject of the book is the journalist and theologian, Brownson, who changed his convictions almost periodically until he embraced the Catholic creed. Finally we must not forget the charming memoirs of our own nonagenarian, G. H. Palmer, whose *Autobiography of a Philosopher* (Houghton, Mifflin) is another human document adorned by the modesty of the man. It must be stated, however, what the publishers failed to make known, that the book is the reprint of the introduction to the two volumes of *Contemporary American Philosophy*, which appeared last year.

HISTORY OF PHILOSOPHY

Mention must be made of B. Rand's critical edition of the early draft of Locke's *Essay* or as the full title reads *Essay concerning the Understanding, Knowledge, Opinion and Assent* (Harvard University). Through such a piece of research, one can follow the growth of Locke's ideas and the development of his empiricism. Of a less searching character is the monograph of Mary J. Kuypers, entitled *Studies in the Eighteenth Century Background of Hume's Empiricism* (University of Minnesota, 1930). In this connection, mention may be made of C. R. Morris' *Locke, Berkeley and Hume*, (Oxford University), as a complementary study. As for the history of Greek philosophy, apart from the textbook already referred to, one notes R. K. Hack's *God in Greek Philosophy* (Princeton Univ.). The influence of Greek philosophy, however, is quite patent in the Socratic dialogue which is employed in a number of books of a semi-literary character.

LOGIC

Although it is becoming next to impossible to determine without fear of contradiction the field of some of the recent volumes because of their lying often on the borderline between two disciplines,—this is particularly true of logic and epistemology,—we shall differentiate the two in this survey. Two large textbooks in logic have appeared within a year, one of them by a British logician who is at present in this country. In her *Modern Introduction to Logic* (Crowell, 1930), L. S. Stebbing attempts to connect the traditional with the recent developments in logic, and accomplishes her task with clarity and skill, although her scope is somewhat cramped by the restrictedness of the Cambridge horizon. R. M. Eaton in his *General Logic* (Scribner's), is somewhat broader and brings to bear upon the subject a good deal of epistemological theory. As compared with these two texts, A. C. Cotter's *Logic and Epistemology* (Stratford, 1930), appears to be a re-incarnation of some medieval treatise. The author is, of course, avowedly scholastic in his point of view, but that can hardly excuse the omission of the symbolic movement. W. G. Ballantine's *The Basis of Belief* (Crowell, 1930), is intended to teach elementary students the process of inference through deductive reasoning, but in places it seems to be over-simplified in method; and the author is not sufficiently careful in the selection of his illustrations. Of a more solid nature, in this regard, is H. D. Jeffreys' *Scientific Inference* (Macmillan). G. D. Walcott's *An Elementary Logic* (Harcourt Brace) is a more advanced book which, though a beginner's text, is sufficiently comprehensive. Nagel has brought out an opuscle in the more specialized area of measurement, viz. *On the Logic of Measurement*.

EPISTEMOLOGY AND THE PHILOSOPHY OF SCIENCE

Mackaye.—There has never been such a coöperation between science

and philosophy as within the last decade. The reason must occur to every reader; and because of this more or less physical dominance, or rather dominance by the physical sciences, of what was erstwhile theoretical ground, epistemology has gone into the background, at any rate for the time being. There need be no apprehension that it will force the fate of metaphysics, but the dearth in books on the theory of knowledge is noticeable to the reviewer. Since the revolution in modern physics, cosmology has raised its head and engaged the attention of both physicists and philosophers. J. Mackaye, *e.g.* in his *Dynamic Universe* (Scribner's) develops a cosmological theory after a searching inquiry into the relativity theory, which he seeks to purge from metaphysical considerations; and concludes that the experience of nature's laws is physical and not metaphysical, as if that were the issue. Apparently, he is blissfully ignorant of Meyerson's *De l'explication dans les sciences*.

Northrop.—A rather audacious stand is made in F. S. C. Northrop's *Science and First Principles* (Macmillan), where after dividing all philosophical problems into physical, mathematical and functional categories, he leads up to the view that the world is a macroscopic atom constituted of smaller atoms, virtually a Leibnizian monadology, with a materialistic lining. After the fashion of the day, this Macroscopic Atom is erected into a Deity with consciousness as one of its attributes; but even the smallest atoms are endowed with certain psychic properties.

Conger.—From a more theoretical but less speculative angle G. P. Conger discusses the philosophy of the sciences in his *A World of Epitomizations* (Princeton Univ.), a work displaying tremendous scholarship but giving the appearance of a compilation of quotations and references.

Epistemological implication in the newer physics are treated by V. F. Lenzen in *The Nature of Physical Theory* (Wiley). H. G. Townsend's pamphlet *Studies in Philo-*

sophical Naturalism (Univ. of Oregon), as well as *A Critical Analysis of the Philosophy of Émile Meyerson* by G. Boas are also contributions to the theory of knowledge. In the same category belongs *Philosophy and Modern Physics* (Principia) by H. T. Davis.

Carmichael and Smart.—Two books of considerable import are R. D. Carmichael's *The Logic of Discovery* (Open Court, 1930), and H. R. Smart's *The Logic of Science* (Appleton). The former is more concrete, with numerous samples drawn from experimenters and discoverers. The latter is a more systematic survey of the sciences, but too abstract and theoretical, although teeming with suggestive observations. Carmichael's problem is, in large part, to solve the question whether there is a single logic in all discovery, *i.e.*, whether it is the same for all fields, no matter what the subject-matter, or whether it is specific according to the science. His thesis is "that the forms of reasoning which in one science compel assent to its conclusions . . . are the same as those which in any other science have the same compelling power . . . But it seems not improbable that a certain heuristic logic in one science may have no conceivable place at all in another." Smart is broad in his treatment and is abreast of contemporary European, particularly French, thought, even though he ignores entirely the behavioristic point of view in his discourse on the psychological and social sciences, thus exposing himself to the criticism in certain quarters that he is arguing away a ghost.

Crum.—R. B. Crum's *Scientific Thought in Poetry* (Columbia Univ.) traces the scientific thought in poetry from Lucretius down to Davidson, and discusses at length the dilemma between rationalism and mysticism. There are a good many gaps in this study, but the substance is there.

Humanism.—The term "humanism" is becoming so large and unwieldy because of its ambiguity that it bids fair to rival such ambiguous

terms as realism. Most of the humanists—and that is omitting the Unitarian connotation of the word—are on the literary side. Science yields a small crop of them, and of the very few is C. J. Keyser whose *Humanism and Science* (Columbia Univ.) is characteristic of his agreeable style and lucid exposition. The book analyzes the concept of humanism and shows the humanistic bearings of mathematics and of science in general.

ETHICS

Tsanoff.—R. A. Tsanoff's *The Nature of Evil* (Macmillan) is one of the outstanding books in ethics. Tsanoff's forte is the application of his problem to literature. The chapters on Leopardi's pessimism and de Vigny's stoicism are perhaps the best in the book. R. W. Sockman's *Morals of Tomorrow* (Harper) is a sprightly and frank discussion of current tendencies among the masses. It is a publicistic work with an ethical flavor rather than a treatise on morals. The spiritual note is struck rather in E. Gilson's *Moral Values and the Moral Life* (Herder, pp. 337, translated by Ward).

Business Ethics.—Ever since the fraternization of big business and universities on a basis of parity, there has been a growing disposition to academize ethics. Schools of business administration keep expanding both on and outside of the campus out of all proportion to the other departments and schools; and there is naturally an impulse to erect business into a branch of science. C. F. Taesch in his *Policy and Ethics in Business* (McGraw-Hill), actually argues for a philosophy of business on the ground that there is a philosophy of nature. It is the best discussion of the relationship and is well organized, even though it takes the reader into sociological recesses or byways with which the author himself is not sufficiently acquainted. *The Ethical Problems of Modern Finance* (Ronald, 1930), and the *Ethical Problems of Advertising* (Ronald) are the first

two series of lectures by various writers,—for the most part, bank officials and directors of advertising concerns—on the Wm. A. Vawter Foundation at Northwestern University.

Value.—The problem of value has been discussed in a number of articles in periodicals (*Journal of Philosophy, Monist*), but an analysis of the various values in life has been undertaken by DeWitt H. Parker in his *Human Values* (Harper) where he pleads for evil as a necessity in the appreciation of life (conception of tragic harmony as he calls it).

PHILOSOPHY OF RELIGION

It is in the field of religion that we see true prosperity. In the first place, the scientists themselves have chosen to court religion and thus to invite the publication of symposia, anthologies, collections, etc., showing both sides of the medal. Secondly, there has been developing a spirit of research among religious-minded writers. One can recommend A. B. Kuhn's *Theosophy* (Holt, 1930), a sympathetic history and exposition of its main tenets, for its sound scholarship and scientific approach. The chapter entitled "Theosophy in Ethical Practice" is particularly relevant and welcome. D. M. Trout's *Religious Behavior* (Macmillan) is largely psychological and sociological in content but philosophical in implications. The most valuable portion of the volume is the lengthy discussion of religious mediation, religious rapport and religious dominance. Of the two books by the late C. A. Bennett *A Philosophical Study of Mysticism* (Yale Univ.) and *The Dilemma of Religious Knowledge* (Yale Univ.), the former is a reprint with an introduction by Rufus Jones; the latter, with a foreword by W. E. Hocking, is a defence against modern theories of religion, sociological and psychoanalytic. T. B. Pratt uses the Socratic dialogue in *Adventures in Philosophy and Religion* (Macmillan). From a less philosophical level, J. O. Cosgrave makes similar points in the *Academy for Souls* (Farrar),

which is an American imitation of *Thus Spake Zarathustra*, except that a Martian takes the place of the wise Parsee mentor. Lunn's conclusion in *The Flight from Reason* (Dial) is that there is no conflict between science and religion but between science and mock-reason. A strong plea for the will to believe is put forth in *Pathways to Certainty* (Scribner's, 1930), by W. A. Brown.

Other studies written from a religious angle are M. H. Krumbine's *Ways of Believing* (Harper); J. L. May's *God and the Universe* (Dial, 209) and W. H. Crashaw's *The Indispensable Soul* (Macmillan, 315 pp.), and D. C. Macintosh's *The Pilgrimage of Faith in the World of Modern Thought* (Longmans). Objective historical surveys one may find in J. A. Weber's *Religions and Philosophies in the United States of America* (Wetzel, 334 pp.); M. M. Dawson's *The Ethical Religion of Zoroaster* (Macmillan, XXVIII + 271), and R. K. Hack's *God in Greek Philosophy* (Princeton Univ., XII + 157).

SYMPOSIA ON RELIGION, PHILOSOPHY AND SCIENCE

Several symposia and compilations with regard to the eternal issues between faith and reason have appeared during the year. The stimulus has obviously been the pilgrimage of well-known scientists to the land of the gods. The very brevity of the symposia and the miscellaneous character of some of them are already a commentary on their value. Mabel Hill's compilation is labelled *Wise Men Worship* (Dutton), and in addition to the statements of scientists, philosophers and professional men, there is a preface by Wm. L. Phelps. Another symposium is called *Science and Religion* (Scribner's). A more startling title for a symposium edited by C. C. Cotton is *Has Science Discovered God?* (Crowell). An exception to these short-nerved symposia is the substantial volume *Religious Realism*, edited by D. C. Macintosh. The Ingersoll Lecture on Immortality for 1931 at Harvard University was given by T. S. Bixler on the subject

Immortality and the Present Mood (Harvard Univ. Press, 69 pp.).

SCHOLASTICISM AND METAPHYSICS

In addition to A. C. Cotter's *Logic*, already referred to, we must take into account J. T. Barron's *Elements of Epistemology* (Macmillan) which espouses "empirical rationalism" and according to which the test of the truth of a judgment is ultimately the reality itself as obvious to the mind. The *Introduction to Metaphysics* (Macmillan, 1930), by Miltner O'Grady seems to be a textbook of a dogmatic type. Finally there is a *Cosmologia* (Stratford) by A. C. Cotter. The activity of Catholic philosophy is not, however, confined to treatises. There are popular books on the market, some of which have already been listed in the rubric on religion, that stress the scholastic outlook. The tendency has been lately to adopt non-traditional methods to promote the interests of the Church; and in the place of the erstwhile isolation, there has entered a spirit of research along modern lines, so that the most heretical theories and views are not ignored, and stagnant treatises or texts are severely criticized by Thomist reviewers.

SOCIAL AND POLITICAL PHILOSOPHY

Of the dozen or more books which might be regarded as falling in this section, we shall select as the most relevant in this connection, *The Philosophy of Human Relations, Individual and Collective* (Bureau of Coöperative Research, Bloomington, Ind.), a source book by H. L. Smith and H. Littell; *the Historical Evolution of Modern Nationalism* (R. R. Smith) by C. J. H. Hayes; B. F. Wright's *An American Interpretation of Natural Law* (Harcourt Brace), which is a study in the history of political thought; P. W. Ward's *Intelligence in Politics* (North Carolina Univ.); C. Sprietsma's *We Imperialists* (Columbia Univ.); and C. W. Pipkin's *Social Politics and Modern Democracies* (Macmillan) a work of remarkable scope.

PSYCHOLOGY

BY WILBUR S. HULIN

PROFESSOR, PRINCETON UNIVERSITY

RADIO TALKS

Sufficient general interest in scientific aspects led to the nation-wide radio broadcasts concerning "Psychology Today." J. R. Angell in the first talk described the relation with other sciences. He emphasized the basis similarity of *Method*, namely, of description. Instead of dealing with the mind as an abstract entity it is scientifically more fruitful to build up orderly, systematic descriptions of mental activity in its two observable forms: consciousness and conduct. W. R. Miles, in the next lecture, described psychology as "a modern science of human management." E. S. Robinson followed with a discussion on the improvement of memory. From a great many experimental results three principles of efficient learning are derived: (a) clearly comprehend what is to be learned, (b) consciously intend to learn, and (c) continually attempt recitations of the material that is being learned. G. Murphy considered the origin and control of social attitudes such as convictions and prejudices: children should be protected from unreasonable attitudes and adults should become tolerant with broadened concepts. R. S. Woodworth declared that the several contemporary schools of psychology (behaviorism, introspectionism, psychoanalysis and *Gestalttheorie*) are important because they aid in clearing away older schools; nevertheless, most psychologists are busy with concrete problems and not with schools. These talks, arranged by the National Advisory Council on Radio in Education, may be reviewed in the pamphlets by H. E. Garrett and W. V. Bingham, called *Psychology Today and Child Development* (Univ. Chicago Press).

OPPOSITION TO PSEUDO-SCIENCE

The necessity for a public education on the sound facts regarding psy-

chology is well illustrated by the campaign which the Society of American Magicians has waged during the past year to rid New York City of clairvoyants, mediums, numerologists, palmists, fortune tellers, and so on. *The New York Times* (July 15) quotes J. Mulholland, vice president of the Society, as follows: "Fortune tellers and their kind break up more homes in the U. S. than any other cause." "People only go to such persons to get answers to two questions; questions about love and money. Fortune tellers have found that plain matter of fact answers do not interest their clients, so they tell them their wife or husband is interested in some other person and thus sow the seeds of jealousy, or else they predict some dire happenings. The public pays an annual fee of \$125,000,000 to these racketeers, of which about \$25,000,000 is spent in New York City. . ."

CONFERENCES AND DISCUSSION

The American Psychological Association which includes the academically trained and professionally accepted workers in the fields of psychology, held its annual meeting at Toronto, Sept. 10-12. In his presidential address W. S. Hunter spoke on "The psychological study of behavior" (*Psych. Rev.*, January, 1932). On the subject of individual development H. M. Halverson reviewed a "genetic study of grasp"; the exceptional strength of grasping in young infants is no longer explained as a pithyoid atavism. From tests upon 720 subjects W. R. Miles has determined "the perceptual abilities in the age range from seven to ninety-two;" there is a rapid rise in ability to the age of 17 and a rapid decrease beyond the age of 62. R. A. McFarland simulated the condition of oxygen deprivation existing at high altitudes and brought out the impair-

ments of coördination of action which result; he suggests that want of oxygen which also results from breathing obstructions may cause certain neuraesthetic symptoms. In the field of education F. McKinney described "certain emotional conditions in learning and efficiency" which included the suggestion of mental inferiority which interfered with good performance. Among the animal experiments reported there were two concerning the classical delayed response method of testing intelligence. One test, by H. F. Harlow showed no consistent differences between different genera of primates. M. O. Wilson indicated that the duration of delay in rats depends upon the prevailing motor set. F. Fearing reported upon the century-old problem of removing the semi-circular canals from pigeons; great variability of results occurred, and almost complete recovery followed many extensive extirpations. P. E. Fields showed that rats could develop a "concept" of triangularity in the arrangement of objects. In the field of neuromuscular phenomena H. Peak devised a nice demonstration for distinguishing between reflex and voluntary action: using the eye wink, a definite difference in speed and pattern of latency of response was obtained.

OTHER CONFERENCES

In the annual meeting of the Southern Society for Philosophy and Psychology the presidential address by E. Bowan concerned "Belief" in its behavioristic aspects such as habit patterns, and in its introspective aspects such as the feelings which always accompany it. (See *Amer. J. Psych.*, July). The convention of the Midwestern Psychological Association was addressed by its president, L. L. Thurstone, on "the measurement of social attitudes" for which he has outlined a program of quantitative analysis which is now being carried out (see *ibid.*). At the Western Psychological Association, C. Stone presided (*Psych. Bull.*, October). F. Boas, in his presidential address before the

American Association for the Advancement of Science, discussed "race and progress" (*Science*). The wide scope of investigations conducted by the division of anthropology and psychology in the National Research Association have included during the year studies of auditory deficiency, national intelligence tests, participation in the White House Conference on child health and welfare, psychology of the "highway" (primarily concerning causes of automobile accidents), vestibular research, *etc.*, a summary of which has been reported by M. I. Bentley (*Amer. J. Psych.*, October).

THEORY AND STUDIES

The *Contemporary Schools of Psychology* (Ronald Press) surveyed by R. S. Woodworth; and as usual the conclusion follows that most members of the science claim no particular allegiance but remain eclectic. An amusing treatment of the various schools has been made by S. K. Chou who employs the analogy of the cinematograph to explain the necessity of the many viewpoints in psychology. Just as the point of view is shifted in taking motion pictures so different points of regard of behavior are needed; and the multiplicity of viewpoints should not bother the psychologist any more than the movie audience (*Psych. Rev.*, May). The center of activity of *Gestalttheorie* in America is at the research laboratory conducted by K. Koffka at Smith College. Many of his studies, even those in English, find their way into the *Psych. Forsch.*, published in Berlin. "Five Behaviorisms" are outlined by K. A. Williams who claims that the most extreme theories are those of Lashley and Weiss who deny the existence of any non-physical entities, the intermediate theories are those of Watson and Hunter who virtually deny mental entities, and then the moderate views of Tolman who allows a mental realm. Thus behaviorism is still in the making (*Amer. J. Psych.*, July). The *Fields of Psychology* (Holt) have been described

at length by G. D. Higginson whose book is well suited to the readers who are moderately acquainted with the factual content of psychology and who desire a perspective of the methods of observations employed as well as the theoretical systems; special topics of developmental, differential and abnormal problems. A survey of the outposts of biological knowledge, called *Biology and Human Affairs* (McGraw-Hill), has given the conclusions of several authorities concerning such subjects as the elimination of unfit members of society by scientific standards, the biological inclination of the study of Mind, the instinct and environment controversy, psychology in industry, and other problems such as of health and nutrition; the book is edited by E. M. East.

EXPERIMENTAL TEXTS

Laboratory.—Several experimental publications have aimed at the current demand for new laboratory texts. Among these are J. F. Dashiell's *Experimental Manual in Psychology* (Houghton Mifflin), the English translation by H. R. DeSilva of J. Lindworsky's *Experimental Psychology* (Macmillan), and a manual of *Group Experiments in Psychology* (Macmillan) by A. Ford. The latter book serves a wide need for dealing with large classes of students; also the scope is broad, including Gestalt problems, applied and personnel tests. M. A. Tinker has begun a series of articles on "The Laboratory Course in Psychology" (*J. Gen. Psych.*)

Technical Dictionary.—A widely acclaimed welcome has met the hint from H. C. Warren that he is "constructing a technical dictionary" of psychological terms. Several years of work have already been devoted to the task and over 8000 words are already in the process of definition; there are about 80 collaborators (*Ibid.*, July).

Education and Evolution.—From N. D. M. Hirsch's *Genius and Creative Intellect* (Sci-Art) one can obtain an

acquaintance with at least the difficulties of analysing the complex personal and environmental situations which the world later comes to vote as "genius." The *Psychology of Intellect and Will* (Harcourt Brace) is the venerable title of H. G. Wyatt's book on the educational process; the old and new theories of volition are exhaustively treated. To his outline of evolutionary psychology J. H. Badley has given the title *The Will to Live* (Dodd, Mead); he says that the characteristic of conscious and sub-conscious activity are similar to those of vital adjustment. The M. Schoen readers have a new book, *Human Nature* (Harper). A reflection upon the everpresent weaknesses in the pattern of human thought is described in G. Zilboorg's article, "The dark ages in psychiatric history"; our tendency to create mental entities is little different than demonology (*J. Nerv. & Ment. Dis.* November).

SENSATION AND PERCEPTION

Vision.—The outstanding book of the year on vision is the work of M. Luckiesh and F. K. Moss, called *Seeing—a Partnership of Lighting and Vision* (Williams and Wilkins); earlier authoritative works have dealt with vision primarily from the point of optics, but here the foundation for a new science is laid in the union of researches on lighting and the older physiological studies. Visual research is often retarded by the expense and complexity of accurate apparatus; helpful suggestions have once again been offered by C. E. Ferree and G. Rand, leading American experts, concerning "an instrument for testing the light and color sense with important features of standardization and control"; much of the early literature on vision is useless because of the indeterminateness of the standards employed (*Amer. J. Psych.*, April). D. M. Purdy has measured several cases of "spectral hue as a function of intensity," thereby adding to the evidence which contradicts both the Helmholtz and Hering theories (*ibid.*, October). "Brightness contrast" de-

pends to some extent on pupillary control; the usual notion that the periphery is more sensitive than the fovea to contrast is not adequately proven. There has been the practical belief that if one sat too close at a motion picture show the boundaries of the picture were focussed on the periphery and that the exaggerated flicker in this extra sensitive region caused strain (*J. Gen. Psych.*, January). C. H. Graham denies "binocular summation"; the threshold equals the more sensitive eye (*ibid.*). A new advertising device, the "Depthograph," which features stereoscopic pictures giving apparent depth from many different points of view, has been brought to notice by L. Carmichael. In "auto driver's tests" on 200 applicants there was the indication that those with poor vision and longer simple reaction times than normal had fewer accidents than the average; but drivers with constricted fields of vision are dangerous (*Amer. J. Optom.*). J. P. Seward has found an "effect of practice on the visual perception of form"; an increasing ability to discriminate vague objects served as the test (*Arch. Psych.*, May). "Form perception in indirect vision" varies in brightness and distortion from the foveal; triangles are most easily seen in the periphery, then octagons, then circles, then squares: R. M. Collier (*J. Comp. Psych.*, February). A brief historical and critical account of the association of colored lights with music (as in the Clavilux) is given by A. D. Pierce: "Color and music" (*Amer. Mercury*).

Audition and Other Senses.—

"The modern conception of deafness" has been reviewed by H. Hays; the types of deafness occurring in the six million sufferers in the U. S. are classified; pathology of hearing is explained on the basis of the Helmholtz theory; much discussion is given to such contributing factors as catarrh and inflammation (*Med. J. and Rec.*). Sound apparatus for auditory research is undergoing rapid and revolutionary changes due to the development of

radio equipment. This technical situation accounts for the current hesitation perhaps in the publication of work on hearing from psychological laboratories, apart from the regular publications such as *Acta Oto-Laryngology*, *J. Acoustical Society*, etc. W. Beasley has described "an audio-frequency compound alternator with independent control of frequency, intensity and phase," (*J. Gen. Psych.*, July).

M. B. Drury and K. M. Dallenbach have found that a better "response of cold spots under successive stimulation" results if the rest intervals between stimulations are at least 20 minute long; this marks the beginning of a definite determination of just how long the intervals should be between stimulation of various tactual receptors; the usual vague standard has been to use a given cutaneous spot only once in an experimental hour, but there is no real basis for this inconvenient restriction (*Amer. J. Psych.*, July). The "pain adaptation" controversy by von Frey and Goldscheider has been subjected to a test by E. F. Wells and L. B. Hoisington who find that mere superficial pain will disappear, as per von Frey, and that more deeply stimulated pain changes to the underlying pressure sensations, as per Goldscheider (*J. Gen. Psych.*, July). The introspective and physiological aspects of "hunger" have been described in a radio talk by A. J. Carlson, leading authority on the subject; the hunger experience is really a complex of pressure sensations resulting from the muscle contractions of the stomach (*Scient. Mo.*). The finer discriminative "perception of bodily motion" comes from visual cues rather than from kinaesthetic, according to H. Gurnee (*Amer. J. Psych.*, January).

FEELING AND EMOTION

In consequence of the influence of Freud's assertion that we tend to forget disagreeable memories there have been many experimental attempts to determine the exact validity of this

statement. One recent attempt is that by A. Jersild on "memory for the pleasant and unpleasant"; his results, from a mere listing of memories indicate that subsequent avoidance activities tend to erase unpleasant experiences (*J. Exper. Psych.*, June). J. A. Guilford claims that a "prediction of affective values" may be accomplished in terms of summation of previous feelings toward the components of the present total situation (*Amer. J. Psych.*, July). In their "studies of affective psychology" E. H. Knipf, W. L. Morgan and P. T. Young have found that despite irrelevant factors of past association there is a very close agreement between children and adults in their reactions to chemically pure odors. Peculiarly, some children dislike all odors, others like all (*ibid.*). The Titchenerian notion of the pressure-like quality of feelings is now extended by W. A. Hunt to a "pressure correlate of emotion," with the same bright and dull pressure qualities reported in introspective studies (*ibid.*, October). R. H. Halsey, president of the American Heart Association, has stressed the intimate relation between heart action and emotion; he believes that certain types of heart disease are the direct result of emotional instability. An organized review of the scattered literature has been given by L. T. Troland in his *Fundamentals of Human Motivation* (Van Nostrand) which describes the abandonment of the older notion of driving forces such as faculties. F. H. Lund has written a popular account of *Emotions of Men* (McGraw-Hill) describing how emotions shape human beliefs and influence individual and social acts. It is sometimes beneficial to reflect that historically the term emotion referred to conflicts in action and not to drives toward adaptive coordinations. Indeed, the term "emotion" has become too comprehensive. In conformity with the older view of emotion C. Bassett has described "fear as a mental health hazard" (*J. Nat. Educ. Assoc.*, February).

PHYSIOLOGICAL AND COMPARATIVE

R. Dodge has brought together his experimental work on the *Conditions and Consequences of human variability* (Yale Press); the outstanding characteristics of behavior are discussed in relation to the refractory phase of nerve impulses, to fatigue, the influence of many faint stimuli etc.; conclusions are also drawn concerning the Mind-Body problem. S. W. Ranson's richly illustrated handbook on the *Anatomy of the Nervous System* (Saunders) has reached a fourth edition; the subject is treated more than ever from the standpoint of development and function; the book is probably the best of its kind for moderately trained students. A fifth edition of C. J. Herrick's *Introduction to Neurology* (Saunders) shows a fundamental shift from descriptions in terms of reflex units to patterned behavior. A. T. Jersild and W. S. Thomas have found a divergent "influence of adrenal extract on behavior and mental efficiency"; the behavior patterns such as dynamometer tests being improved while mental tests such as mathematical calculations being upset; temporary emotional disturbance is also prominent (*Amer. J. Psych.*, July). Contrary to the widely held belief there is a growing body of evidence to show that certain ventral roots of the spinal cord contain sensory tracts; W. F. Windle has added to the new observations some microscopic slides of ganglion cells from the "ventral roots of man and other mammals" (*Arch. Neurol. and Psychiat.*, October). E. Sachs emphasizes the necessity of cooperations between neurosurgeons and neurologists in the *Diagnosis and Treatment of Brain Tumors* (Mosby); the special training of the neurologist in judging psychological symptoms is as important as the surgery. R. R. Peabody has published some of his clinical experiences with inebriates in the book, *Common Sense of Drinking* (Little, Brown). With moving film records W. R. Miles has demon-

strated that as we blink the eye goes through a sort of rinsing process; the lids each perform a circular motion and the eyeball darts upward; if the lids merely closed a line of sweepings would gather along the boundary of contact and in drying would become painful: "Eyeballs in winking" (*J. Exper. Psych.*, August).

For the serious student one of the best books of the year in any field of psychology is E. B. Holt's *Animal Drive and the Learning Process* (Holt). The subject is a scientifically cautious description of the first forms of activity that are empirically observable in young organisms, the source of stimulation causing neural growth (neurobiotaxis) and the types of integration of action such as the reflex circle, then the basis of avoidance and approach responses—both of which are due to the tendency to adjust in ways which incur more of the stimulus ("adience"); then the postural and proprioceptive causes of purpose-like action. The author is acutely critical of vague verbalisms such as "instinct." *Animal Aggregations* (Univ. of Chicago Press) describes the social and ecological implications found in the relationships of animal groups. One contribution to the heredity environment debate is given by A. R. Onorato and H. W. Stunkard on "the effect of certain environmental factors in the development and hatching of the eggs of the blood flukes," such as temperature (*Biol. Bull.*, August). There is a "grasping reflex in the new-born monkey" just as there is in the human infant; a further argument is made against the recapitulation theory: C. Richter (*Arch. Neurol. and Psychiat.*, October).

ABNORMAL

An American interpretation of the psychoanalytic theories of Jung with a special consideration of *American Types* (Knopf) has come from J. Oppenheim who proposes further classifications based on physical characteristics such as physiognomy. Concerning "the basic symptoms of

schizophrenia" (or what formerly was called dementia praecox) M. Levin finds that the faulty associations of the schizophrenics are distinctly different from those seen in the feeble minded (*Amer. J. Psychiat.*, September). An American translation of S. Freud's pamphlet, called *Modern Sexual Morality and Modern Nervousness* (Eugenics Pub. Co.), presents the usual claims concerning repressions. W. A. White, the outstanding authority on insanity has described the mental factors in disease: *Medical Psychology* (Nervous and Mental Disease Pub. Co.). An Adlerian practitioner, F. Künkel, has formulated answers to various psychotherapeutical questions in his book *God Helps Those . . .* (Ives Washburn Pub.). E. Wexberg's *Psychology of Sex* (Farrar & Rinehart) is also Adlerian; "adjustment" is the goal of the book. M. W. Peck's *Meaning of Psychoanalysis* (Knopf) is one of the most compact, yet comprehensive treatments of the subject that has appeared. R. R. Willoughby argues for the "efficiency of short psychoanalyses" instead of those continuing for months or years; the reforming of habits may be undertaken vigorously and swiftly as well as slowly, according to William James's famous advice on habits (*J. Abn. and Soc. Psych.*, July). The "differentiation of the hypnotic trance from normal sleep" as tested by knee jerk and voluntary response to sound shows that sleep and hypnosis are not the same phenomena; in hypnosis tonicidity is very much like that of the waking state: M. J. Bass (*J. Exper. Psych.*, August). The "manic-depressive psychosis" is said to be a result of poisons created within the body: H. Lundholm (*Duke Univ. Psych. Monog.* No. 1). In a series of articles on "the training of a psychiatrist" the benefit of university departments of psychiatry has been considered; the pertinent phases of physiology and etiology could conveniently be furnished by academic institutions (*Amer. J. Orthopsychiat.*).

SOCIOLOGY

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THE AMERICAN SOCIOLOGICAL SOCIETY

The twenty-fifth annual program of the American Sociological Society, held in Cleveland Dec. 29-31, 1930, was devoted to the subject of Social Conflict. An unusual feature was the annual dinner program at which speakers representing other social sciences, including Charles E. Merriam (Political Science), Wesley C. Mitchell (Economics), E. B. Wilson (Statistics), and Edward Sapir (Anthropology), commented on the twenty-five years work of the society. The presidential address by Howard W. Odum (University of North Carolina) was entitled "Regional and Folk Conflict as a Field for Sociological Study." Emory S. Bogardus (University of Southern California) was elected president of the society for the year 1931, and Ellsworth Faris (University of Chicago) and R. D. McKenzie (University of Michigan) were chosen vice presidents.

REGIONAL AND SPECIAL ASSOCIATIONS

One of the marked recent developments has been the organization and growth of strong regional associations. Some of these, like the Iowa and Indiana associations of Economists and Sociologists, the Ohio, Missouri, the Pacific Coast, and St. Louis sociological societies, and the Southwestern Social Science Association, have been in existence for one or more years previously, but there seems to have been a decided growth in interest and in the quality of the work of these organizations. The New York City sociologists are meeting monthly at the Town Hall Club in the year 1931-1932. The Eastern Sociological Conference was held in New Haven in April and the American Country Life Association at Cornell in August, under the presidency of L. H. Bailey. The Society for Social Research of

the University of Chicago, meeting in August, devoted the entire time of its sessions to the subject of regionalism. The Chicago Academy of Criminology was organized May 14 to provide an authoritative clearinghouse for the discussion of matters pertaining to criminological science. E. H. Sutherland was elected president. It is as yet uncertain whether the rapid growth of regional sociological associations unaffiliated with the American Sociological Society signifies merely an overflow of activities in the field of sociology or a movement toward decentralization.

SOCIOLOGICAL RESEARCH

Methods.—The major sociological emphasis of the year has been upon research and research methods. Two general methodological works edited by Stuart A. Rice—*Statistics in Social Studies* and *Methods in Social Science*—have appeared. They have on the whole succeeded better in outlining the scope of sociological methodology than in indicating its methods of procedure. The first book is a series of papers on various fields of sociological study by as many authors and the latter is an incomplete analysis of the chief concepts and orientations of the science taken largely from second and third hand sources.

Range of Study.—An analysis of research projects under way, published in the *American Journal of Sociology* (March, 1931), showed members of the American Sociological Society to be engaged upon 247 research undertakings, as follows: Social theory and its history, 14; human nature and personality, 16; the family, 10; peoples and cultural groups, 10; conflict and accommodation of groups, 13; population and territorial groups, 27; urban community, 5; rural community, 30; collective behavior and social control, 35; social organizations, institutions and culture, 31; social problems and social pathology, 28; social ad-

justments and social agencies, 17; teaching and research in sociology, 11.

Studies of Social Trends.—The President's Research Committee on Social Trends, directed by W. F. Ogburn (Chicago), has completed the first drafts of its thirty-one projected reports divided into four general groups of studies and will reorganize this material for publication in 1932. The list of studies (*American Journal of Sociology*, XXXVI: 815-17) includes such varied subjects as mechanical inventions, our changing social attitude, occupations and the activities of the unoccupied, urban problems, consumption habits, and governmental trends, grouped under the four general headings of Basic Factors; Constitutional Changes; Institutions, Groups and Functions; and Efforts to Improve. The quasi public nature of the committee carrying on this investigation renders its work of more significance than might appear to be indicated by either its plan or the incompleteness of the subjects investigated.

Fellowships.—Five of the twenty-six Social Science Research Council research fellowships in the social sciences (*Amer. Jour. Sociol.*, XXXVII: 279-282) for the year 1931-1932 were granted to teachers and researchers in sociology holding the Ph.D. degree: Herbert Blumer (Chicago), R. G. Foster (Cornell), Mildred B. Parten (Minnesota), Samuel A. Stouffer (Chicago), and G. B. Vold (Minnesota). Grants-in-aid were also made by the same organization to teaching sociologists as follows: W. C. Reckless (Vanderbilt), B. J. Stern (Columbia), and Mildred R. Mell (Shorter). The subjects for study on these grants include specified aspects of fashion, family relationships, social procedures, statistical method, delinquent behavior prediction, commercialized vice in Chicago, L. F. Ward's sociology, and social changes in Georgia.

Problems and Needs.—At the invitation of the Social Science Research Council, extended equally to the several national social science associations, the American Sociologi-

cal Society has appointed a Special Committee on Sociological Research to examine the problems and needs of research in its field. The Committee is now engaged in a study of effective sources of materials for research. The ostensible object sought by the sponsoring organization is to secure some decentralization of responsibility in the granting of fellowships and aid to investigators and to shift a part of this responsibility upon the several social science organizations, thus countering some criticism aimed at the selections previously made. This move will throw the burden of securing a proper selection within each social science upon the management of its national society, a result which can be achieved only if the national organizations are not controlled by political cliques dominated by leading universities and active personalities.

Technique of Research.—At the present time the emphasis upon the development of measurement scales and technique of research in sociology is almost as great as interest in the actual prosecution of research. There appears also to be some tendency to exclude all forms of research from the category of research if they do not employ either statistical or case methods.

MAJOR FIELDS OF SOCIOLOGICAL INTEREST

Cultural Sociology.—Interest in cultural sociology, which was so strong in this country in the eighteen-eighties and which has been reviving for some years due to the maturing of anthropological investigations, has been manifested during the past year through several publications, including *The Evolution of War* by Maurice R. Davie (Yale), *A Handbook of Ethnography* by James G. Leyburn (Yale), a translation of Lippert's *Kulturgeschichte* by G. P. Murdock (Yale), a new edition of *Societal Evolution* by A. G. Keller (Yale), *Culture and Progress* by W. D. Wallis (Minnesota), and *Social Process and Human Progress* by C. M. Case (Southern California). Several papers dealing with the field,

function and reclassification of culture have also appeared, while numerous field studies are going forward. The trend in anthropology seems to be definitely toward sociological analysis and interpretation, with the result that there is considerable activity in the direction of a realignment and a new utilization of cultural data on the part of the sociologists.

Social Psychology.—Emphasis upon social psychology continues to be strong, as will be observed from the distribution of research themes listed above. Of the 230 doctors' dissertations in sociology listed in the *American Journal of Sociology* (XXXVII: 94-106) as in progress in 1931 in the various universities of the United States, the titles of 49 or 21 per cent of them indicated that they were concerned primarily with social or collective psychology, and 48 more appeared to have a strong secondary bearing upon these fields. Three textbooks in social psychology have been published during the year under the authorship of E. T. Krueger and W. C. Reckless (Vanderbilt), J. K. Folsom (Vassar), and Gardner Murphy (Columbia) and Lois Barclay Murphy (Sarah Lawrence). Other important works of a similar character are *Race Psychology*, by T. R. Garth (Denver) and *Social Attitudes*, produced in honor of W. I. Thomas (New School of Social Research) by fifteen of his former students and associates. The present emphasis in social psychology is predominantly sociological, having to do largely with conflict and adjustment of individuals in collective relations and with the integration of collective behavior on cultural levels under the impulse of various sorts of psycho-social controls, such as fashion, propaganda, public opinion, etc. Personality traits, behavior measurements, etc., also receive considerable attention.

Educational Sociology.—The emphasis upon educational sociology is strong among graduate students, but is still largely neglected by leading teachers and investigators in the field, the present year being particularly unproductive in this respect.

Rural Sociology.—Owing to the

stimulus of government funds there is a considerable amount of current investigation and publication, mostly of research bulletins, in the field of rural sociology, by teachers and trained investigators and also by graduate students. The publication of *A Systematic Source Book in Rural Sociology*, edited by C. J. Galpin, P. A. Sorokin, and C. C. Zimmerman, has reached its second volume. Also W. A. Terpenning (Kalamazoo Normal) has published *Village and Open-country Neighborhoods*. One of the more outstanding rural results of field investigation is B. L. Melvin's *The Sociology of a Village and the Surrounding Territory*. Important bulletin studies, mainly on rural population areas and movements, have been reported from the experiment stations of Ohio, New York, Missouri, Michigan State, Oklahoma State, and the United States Department of Agriculture under the general direction of C. J. Galpin. *The Sociology of City Life*, by Niles Carpenter (Buffalo) is the major systematic contribution to urban sociology during the year.

The Family.—Publication in the field of the family is represented for the year by Reuter and Runner's (Iowa) *The Family*, M. C. Elmer's (Pittsburgh) *Family Adjustment and Social Change*, and J. P. Lichtenberger's (Pennsylvania) *Divorce—A Social Interpretation*.

Crime and Delinquency.—Although the National Commission on Law Observance and Enforcement has reported on various phases of the crime situation and various important monographic studies of delinquency have been made by various public or private research units, the output of trade publications on criminology and penology has not been particularly large. Of this type may be mentioned C. R. Shaw's *The Natural History of a Delinquent Career* and *The Jack-Roller*, F. N. Cantor's (Buffalo) *Criminology: A Study in Method*, J. L. Gillin's (Wisconsin) *Taming the Criminal*, and H. E. Barnes' *Battling the Crime Wave*.

Textbooks.—Three introductory textbooks in sociology have appeared

during the year: *Backgrounds for Sociology*, by H. G. Duncan (New Hampshire); *Man and His World*, edited by J. H. S. Bossard and his colleagues at the University of Pennsylvania, and *Society: Its Structure and Changes*, by R. M. Maciver (Columbia). Other important sociological works issued during this period are *Animal Aggregations*, by W. C. Allee (Chicago); *The Technique of Social Progress*, by Hornell Hart (Bryn Mawr); *Race Mixture*, by E. B. Reuter (Iowa); *Sociology and Christian Ideals*, a symposium; *International Communication*, by H. N. Shenton (Syracuse), E. Sapir and O. Jespersen; *American Standards and Planes of Living*, by T. D. Eliot (Northwestern); and *Pioneering on Social Frontiers*, by Graham Taylor (Chicago Commons).

SOCIOLOGICAL WORK AT THE UNIVERSITIES

Fields.—Types of research especially emphasized during the year at the various universities include social legislation and public welfare activities, embracing both state-wide and local studies, at Tulane; crime and unemployment, at Kansas; the Indians, at Oklahoma; Chinese and Chinese immigrants, at Stanford; folk and regional problems, at North Carolina; jails and jail population, at Virginia; convict populations, at Texas; family, delinquency, and social welfare problems, at Western Reserve; history of social theory, at Nebraska; immigrant attitudes, at New Hampshire; oriental immigration, at Texas Christian and Hawaii; collective behavior, social attitudes and rating scales, at Southern California; human ecology, population movements, and family jurisprudence, at Michigan; collective behavior and American social theory, at Washington; culture and geography, at Yale; and a wide range of subjects at Columbia, Chicago, Pennsylvania, and Washington (Seattle).

Research Professorship.—Distinctive changes in or additions to the scope of the work of departments of sociology have occurred in several institutions. At Hawaii a new re-

search professorship has been established for visiting professors who join the staff for a year and pursue some work of interest to themselves and the islands, thus resulting in an exchange of experience and counsel. R. E. Park (Chicago) holds the position this year and E. B. Reuter (Iowa) held it the preceding year.

College Departments.—At Michigan a considerable number of fellowships in sociology known as the Earhart Fellowships have been established to encourage graduate study in the subject. Vassar has organized an Institute of Euthenics, with a new building and other equipment, and sociology participates in the work of the Institute. Money has been provided at Oberlin for the development of field work which will serve majors in the department of sociology in a manner analogous to the uses of a laboratory in the exact sciences. Indiana University has established a Bureau of Social Research in Indianapolis, under the direction of R. Clyde White of the department of sociology. It has already undertaken important investigations in juvenile delinquency. The new division of sociology established at Harvard in 1929-1930 under the chairmanship of P. A. Sorokin has achieved organization in the current year and is offering a large variety of courses taught by members of other related departments and by instructors in sociology proper. At Yale the divisions of Anthropology and human geography have been associated with the old department of economics, sociology, and government and new and more cooperative opportunities for research and graduate study are being developed, partly through the Institute of Human Relations.

Dismissals.—The year 1931 has also proved unusually eventful in the matter of dismissals or other separations of sociologists of higher rank from their university positions. Events in this connection generally regarded as unfortunate and, in part at least, as difficult or impossible of justification, having occurred under one pretext or another at Ohio State Univer-

sity, North Carolina State College, and the University of Washington. Unapproved social and economic theories appear to have been chiefly the exciting causes of rupture.

SOCIOLOGY PERSONNEL

Among new college and university appointments of full professorial rank in sociology may be mentioned R. S. Lynd, former permanent secretary of the Social Science Research Council, at Columbia; Harold A. Phelps, as professor of sociology and director of graduate training for social work, at Pittsburgh; Jesse F. Steiner, formerly of Tulane, at the University of Washington; J. K. Folsom, at Vassar; H. E. Jenson, formerly of Missouri, at Duke; Delbert M. Mann, formerly research associate in sociology at the University of Virginia, at Scarrett College, Nashville; Oscar Wesley, at Drexel Institute; J. M. Reinhardt, at Nebraska; and R. W. Murchie, at Minnesota.

Various sociologists have been on leave of absence for part or the whole of the year for work on various projects and commissions. Herbert N. Shenton (Syracuse) has headed a committee of the Federal Council of Churches of Christ in America to make a study (now completed) of the public relations and trade practices of the motion picture industry. B. L. Melvin (Cornell) has served as research secretary of the Committee on Farm and Village Housing of the President's Conference on Home Building and Home Ownership. A. J. Todd (Northwestern) spent most of the year preparing a report on central financing of social agencies for the New York Welfare Council. J. H. S. Bossard (Pennsylvania)

gave several months to collecting data and preparing a report on *University Education for Business*. Thorsten Sellin (Pennsylvania) spent the year on the staff of the Bureau of Social Hygiene, Inc., of New York City. Malcolm Willey (Minnesota), E. H. Sutherland (Chicago), and S. A. Rice (Pennsylvania) gave part of the year to The President's Research Committee on Social Trends.

F. A. Bushee (Colorado) studied social reform technique in Scandinavia and M. J. Herskovits (Northwestern) spent eight months in West Africa. E. A. Ross (Wisconsin) has been chosen president of the Committee on Cultural Relations with Latin America. Maurice Parmelee has returned to the United States after several years abroad in research and governmental service and announces for future publication a series of six treatises on the general subject of *The Evolution of Human Nature and Culture*. Fred R. Yoder (Washington State) went to Japan as a member of the Laymen's Foreign Missions Inquiry Commission. Howard W. Odum (North Carolina) has been made chief of the Division of Social Science in "A Century of Progress," of the Chicago International Exposition of 1933.

The year also witnessed the decease of two of the most distinguished of American sociologists, Franklin Henry Giddings (1855-1931) and Frank Wilson Blackmar (1854-1931). Both began to teach sociology in 1889, the former at Bryn Mawr College and the latter at the University of Kansas. Both were past presidents of the American Sociological Society and authors of several outstanding works in sociology.

ANTHROPOLOGY AND ETHNOLOGY

BY CHARLOTTE D. GOWER

PROFESSOR, UNIVERSITY OF WISCONSIN

ETHNOLOGY

General.—Civilized man's explorations of the world have brought him

into contact with even the most isolated of its inhabitants. As a consequence, it is extremely difficult to

find groups of existing peoples so diverse in physical form or cultural behaviour as to constitute a true ethnological discovery. Progress in this field lies in the enrichment of our information concerning the several groups, and in the correlation of the data already gathered. The contributions of the studies of a single year to the general knowledge of ethnology are of so subtle a nature that it is difficult to point out any definite steps which have been made. The cumulative effect of the work of many years may be perceived as trends, the inception of which could hardly be referred to any absolute date.

"Functionalists".—In the field of ethnological thought three general tendencies may be observed to be in the ascendancy and may be termed new, although they are by no means the product of the last twelve months alone. Of these the first is represented by the point of view of the so-called "Functionalists" with their emphasis on the study of the interactions between the elements of a single culture. It represents a reaction away from the purely historical point of view, and favors the making of deeper and more intensive studies of single cultures.

Acculturation.—In America the studies of the effects of contacts between cultures represent a second trend. This same problem of acculturation is being attacked by an expedition organized by the Uzbek Research Institute of Samarkand and the Moscow Institute of Experimental Psychology. Although the point of view of these investigators is primarily psychological, the object of their study is cultural change, and their results should be of the highest anthropological importance. Two groups in the Altai mountain region were selected for comparison, one nomadic and the other agricultural, with the purpose of recording the changes which occur in group life and thought as the result of the introduction of a higher and more complex economic organization.

In Great Britain the study of acculturation is taken up from a more practical point of view. At the meet-

ing of Section H of the British Association for the Advancement of Science a significant number of papers dealt with the application of anthropological knowledge to the problems of governing native populations.

THE AMERICAN INDIAN

Arizona.—The Southwestern area is the center of most active research in North America. At a site near Alantown, Ariz., Dr. Frank H. H. Roberts has begun work on the largest archeological expedition ever attempted by the Bureau of American Ethnology. This village was occupied from about 500 A.D., the period of the earliest Pueblo culture (Pueblo I), until some time during the third phase of Pueblo development (Pueblo III), which lasted from 900 to 1200 A.D. The work is to be continued over a period of five years. After extensive excavation the Pueblo will be restored to its original condition.

Utah.—An expedition from the Laboratory of Anthropology at Santa Fe investigated some squarish stone houses in northeastern Utah, under the direction of Dr. Albert B. Reagan. In general form the houses resemble a type found in southwestern Colorado, while stone structures surrounding them call to mind the shrines of the Small House people of northern New Mexico. The builders of these houses practiced agriculture with irrigation, raising maize and pumpkins. On the whole their culture seems to be that of late Pueblo I or early Pueblo II, although the pottery, which is coarse, gray ware, smoothed but undecorated, might indicate a somewhat earlier date.

Colorado.—Dr. Paul Martin of the Field Museum Archeological Expedition at the Lowry ruin in southwestern Colorado found indications of prehistoric culture contacts within the Pueblo area. At the bottom of a sacred spring were discovered forty prayer sticks of the Hopi type, and fragments of pottery like that of the Chaco region in New Mexico. The Lowry site was inhabited during three periods, the last of which was either late Pueblo II or early Pueblo III.

Further evidences of widespread

trade relations in the prehistoric Southwest were among the results of the San Diego Museum's work in the Mohave desert and the lower basin of the Colorado river. The Mohave seem to have carried on trade with the Pueblo area to the east, and with groups lying as far west as the Pacific coast. Further accomplishments of the expedition include the discovery of the habitations of the Pueblo turquoise miners at the Mohave mines, and the excavation of an early Mohave cremation cemetery.

A hitherto unknown horizon of Yuman culture was discovered by Malcolm J. Rogers in a survey made for the San Diego Museum. Old fishing villages lie along the terraces of the now extinct Blake sea, a body of fresh water which once covered much of the Colorado desert. This sea is estimated to have existed for a period of one thousand years. The main diet of the early Yuman inhabitants seems to have been fish.

Mississippi Valley.—The first remains of an earth lodge ever found in Illinois were discovered by the University of Chicago Archeological Expedition directed by Dr. Fay-Cooper Cole. The discovery was made in the course of the excavation of hut circles in Fulton County, Ill. It represents the northeasternmost outpost of a culture typical of the Southeast and Upper Missouri.

MAYA

Guatemala.—Under the auspices of the Carnegie Institution of Washington, Ledyard Smith carried on further investigations of the Maya Old Empire site at Uaxactun in the department of Peten, Guatemala. Biologists from the University of Michigan accompanied the expedition to study the flora and fauna of the region, and Dr. E. Wythe Cooke of the U. S. Geological Survey made observations on its geological features. The results of Dr. Cooke's work indicate the probable causes of the depopulation of Peten. Before the Maya occupation the Peten region was a lake country. In the forests

surrounding the lakes a heavy layer of black soil overlay the limestone. When the Mayas cleared the land for cultivation, the black soil was exposed to erosive agents and was slowly washed down into the lake beds. This at once diminished the amount of arable land and turned the lakes into swamps, which afforded breeding grounds for many mosquitoes. Malaria became prevalent. There was less water available during the dry seasons, and the lakes were useless as a route for communication between the settlements. These unfavorable conditions forced the Mayas to abandon the region shortly before the arrival of Columbus. At Piedras Negras, Guatemala, Dr. J. A. Mason of the University Museum of Pennsylvania discovered a lintel which is the finest example of Maya sculpture that has been found.

Valley of Mexico.—At El Arbolillo Dr. George C. Vaillant has found evidence confirming the results of his stratigraphic work at Ticoman and Zacatenco. He has also been able to learn more concerning the mortuary customs of the earliest bearers of the Archaic culture.

EUROPE

England and France.—The continued study of the paleolithic artefacts of Europe, together with the material of the same type which has been found in Asia and Africa, has led to certain changes in the accepted prehistoric chronology. On the basis of further work in England and a reconsideration of the evidence from classic French sites, leading prehistorians are inclined to date the beginning of the Old Stone Age from the first interglacial period, rather than from the third as heretofore. Not only is the duration of human occupation of Europe vastly extended, but the classification of artefacts has been somewhat amplified. The Abbé Henri Breuil, in his latest account of European cultural chronology, has introduced three new industries which he recognizes as distinct: the Clactonian, Levalloisian, and Micoguan.

The first of these is quite new. It is a flake industry more or less contemporary with the late Chellean and early Acheulean. The Levalloisian and Micoquian have long been recognized as variants of the Mousterian, but have not had the status of independent cultures.

Ireland.—Investigations conducted by the Bristol Spelaeological Society, with the aid of the Royal Irish Academy, have revealed fragmentary skeletal remains of supposedly Paleolithic date in Kilgreany cave in the south of Ireland. The bones seem to represent burials, and lie beneath an undisturbed layer of stalagmite above which are evidences of Neolithic, Bronze, and Early Iron Age occupations. The fauna of the sub-stalagmitic layer would indicate a late Pleistocene date. Unfortunately no artefacts were discovered.

Spain.—Within the limits of the city of Madrid have been found the remains of a city which antedates the Bronze age. Its excavation has been undertaken by Dr. Hugo Obermaier and Don José Perez, chief of historical investigations for the City of Madrid. They have found the foundations of thirty huts arranged in a semicircle facing south. This settlement is thought to have been made by early African immigrants, inasmuch as the implements found bear a marked resemblance, even in details, to similar objects recovered from the Sahara region.

THE NEAR EAST

Crete.—At Knossos, Sir John Evans has discovered a great tomb with walls fifteen feet thick, built into the side of a hill. It seems to have been the tomb of the Priest-Kings, and the center for the cult of the royal dead. Nearby was the residence of the guardian priest, containing an inner sanctuary and an altar. The tomb dates from the first quarter of the sixteenth century before Christ. Within the city of Knossos was found a room which contained forty vessels and other objects devoted to a domestic form of serpent worship.

Egypt.—Miss G. Caton-Thompson made a survey of the Kharga oasis, and reports that paleolithic and neolithic implements are to be found there in incredible numbers. This oasis was never a lake, so that there will be no opportunity to establish cultural chronology by means of implement associations with old beaches, but some stratigraphic records may be obtained from the deposits of former springs.

Palestine.—Miss Dorothy Garrod continued to direct the joint expedition of the American School of Prehistoric Research and the British School of Archeology at Jerusalem. As in previous seasons excavations were made in caves near Athlit at the foot of Mount Carmel. In the Mugharet-el-School a Neanderthal child's skeleton was found embedded in breccia of the Middle Paleolithic level. The finds in the Mesolithic levels were abundant and included a mass burial of eight or ten individuals. Sir Flinders Petrie, directing the work of the British School of Archaeology in Egypt, has found at Gaza a city that was greater in extent than Troy. From the names of kings which appear on various objects taken out it is clear that the site was occupied by the Hyksos. It is the first city of the Shepherd Kings to be found in Palestine. The city was abandoned in 2000 B.C. The cemetery at Jericho has been unearthed by Professor John Garstang. It dates from the nineteenth century before Christ, and represents one of the richest finds ever made in Palestine.

Mesopotamia.—The joint expedition of the British Museum and the University Museum of Pennsylvania has continued excavations at Ur of the Chaldees, especially in the residential section. Their results provide a picture of life at Ur in the time of Abraham. One hundred and fifty school exercise tablets and mathematical texts afford an idea of what was taught in Sumerian schools during the twentieth and nineteenth centuries before the Christian era. At Kish the

Oxford-Field Museum expedition discovered the first certain evidence of trade between Sumeria and the Indus valley. A cylinder seal of the type associated with the Indus civilization was found in one of the lower levels at Kish. Tell Billa, in northern Mesopotamia, was inhabited from about 4000 B.C. until the fall of the Assyrian Empire in 606 B.C. It is being excavated by Dr. Ephraim A. Speiser for the University Museum of Pennsylvania. Among its interesting features is a cyclopean retaining wall discovered in the lowest stratum.

Persia.—The earliest evidence of the domestication of the horse has been found by R. de Mecquenem in his excavations at Susa. Drawings of men on horseback were engraved on

implements of gazelle bone. These occurred in the strata of Susa II, dating from 3100 B.C. or earlier.

CHINA

It is regrettable that the Society for the Protection of Ancient Relics, a semi-official organization recognized by the government at Nanking, has succeeded in putting serious impediments in the way of several foreign expeditions wishing to conduct scientific research in China. As a result of this the work of the American Museum of Natural History in Mongolia has been discontinued. There have been no further finds of *Sinanthropus pekinensis*, but casts of the separate bones of the 1929 cranium have been prepared for distribution.

MENTAL TESTS

BY FRANK N. FREEMAN

PROFESSOR, UNIVERSITY OF CHICAGO

DEVELOPMENT OF NEW TESTS

Shift From Intelligence Tests.

—The development of new mental tests during 1931 has followed the same trend as during the two years previous. The productive activity in this field has shifted from the interest in and the development of intelligence tests to the development of tests which aim to measure some aspect of personality, or to measure some type of special ability. Tests of intelligence, or of general intellectual ability, have apparently advanced about as far as they are likely to advance until some radically new procedure or principle has been discovered. The Binet Scale led the way by making up a list of intellectual stunts or puzzles of graded difficulty and basing the individual's score on the sum total of his performances on the individual tasks. The group intelligence tests are simply another form of presenting the same fundamental type of material. Later scales improved on earlier ones by checking up on the individual items of the scale with refer-

ence to some criterion. The latest criterion to be used in evaluating the items or the test is Spearman's hypothetical *g*. Spearman has devised a statistical technique for determining the closeness with which performance on the test correlates with the central factor or *g*, and some of his followers have used this technique in building up intelligence tests.

Personality Tests.—The procedure and content of tests of traits of personality are still in the formative stage of development. Some of the earliest tests in this field have turned out to be disappointing because it has not yet been possible to determine what it is that they measure or to identify what they measure with the features of the individual's general behavior. However, experimental development of personality tests proceed apace and possibilities of practical applications of these tests are beginning to be revealed. A few examples of new tests of personality traits may be mentioned to illustrate the variety of traits for

which tests are being devised. A number of tests have previously been worked out to measure neurotic tendencies, based on the symptoms commonly noticed by psychiatrists in their studies of individual cases. An elaborate new tests of this sort appears in Thurstone's Personality Schedule. This test does not attempt to classify attitudes except to put together all of those which show a neurotic disposition. Other tests attempt to reveal more specialized attitudes. Faterson, for example, has devised a scale for measuring inferiority attitudes. Bernreuter has put out a Personality Inventory to measure not only neurotic tendencies but also self-sufficiency, introversion-extroversion, and dominance-submission. He thus attempts to measure the four types of attitudes with a single test. Allport and Vernon have worked out a test to measure the dominant interests of the individual according to the classification worked out by Stranger. This classification puts dominant interests under the following heads: theoretical, economic, aesthetic, social, political, and religious. Willoughby has a scale to measure emotional maturity, Lentz one to measure types of opinion, such as conservatism, acquiescence, and so on; Barry one to measure negativism and compliance; Lincoln and Shields, a test to measure maturity in moral judgment in children, and the staff of the Bureau of Public Personnel Administration, a test in social intelligence. Few, if any of these tests, have yet been subjected to evaluation by other than their authors and their validity is yet to be determined. The technique of tests of this character, however, is rapidly being developed and the outlook for the usefulness of tests of personality traits is hopeful.

EVALUATION OF TESTS

Reliability.—The general technique of the evaluation of tests is now reasonably well developed and much energy is being devoted to the determination of the reliability and the

validity of tests of all types. Reliability is a relatively simple thing to test. One has only to give the same test to the same individuals twice, or to give two forms of the test to the same individuals and then to determine by means of correlation how consistent the two sets of scores are.

Validity.—The determination of validity is much more difficult. Its object is to find out what it is the test measures, or whether it measures what it is supposed to measure. Sometimes what the test measures seems so obvious that it does not occur to those who use it to check up on its validity. This was the case, for example, for a long time with the Seashore Music Tests. It is, perhaps, obvious that the individual tests measure what they purport to, as, for example, the test of pitch discrimination, discrimination of loudness, recognition of time intervals, and so on. What is not so obvious, however, is that these tests, separately or together, measure the ability which is necessary to profit by musical training. At least three studies during the past year have been devoted to this question with, on the whole, favorable results. A similar question arises concerning tests of mechanical aptitude, including motor ability. A very elaborate study of these tests, using in part old tests and in part new ones, has been published during the year under the title, *The Minnesota Mechanical Ability Tests*. Other studies in this field have also been made. It appears that what we call mechanical ability is not a single, unitary ability but is made up of several. The Minnesota investigation yields seven such nodes or group factors in mechanical ability. Other studies have shown that tests which go by the same name really measure different traits. The final analysis of abilities which are classed under this general head will require still further investigation.

Progress and Results.—Studies for the evaluation of personality traits sometimes indicate that the

differences revealed by the tests correspond with identifiable differences in the individual's general behavior and they sometimes fail to reveal such a correspondence. A study of the George Washington Social Intelligence Test, for example, shows that it has a moderate correlation with intelligence, but does not correlate with the other indications of social intelligence which the experimenter was able to secure. Another study indicated that social intelligence, as measured by the test, was relatively independent of general intelligence. A study of part of the Downey Will-Temperament Test failed to reveal correspondence with the child's achievement in school. A study of the Allport Ascendancy-Submission Test revealed some correspondence with general behavior. A study of the Pressey Cross-Out Test of Emotions and of the Colgate Mental Hygiene Test, failed to reveal correspondence with scholastic success. A study of an inferiority attitude scale revealed very slight relations to actual physical defect. Physical defect, of course, may or may not produce an attitude of inferiority, so that such a comparison is not conclusive. The comparison of a number of tests of perseveration fails to reveal much correlation between them. So the work of test development proceeds. Invention is followed by evaluation and evaluation points the way to new invention. Progress is made haltingly but advance can be discerned.

THEORY AND NATURE OF ABILITY

Some investigations are of somewhat more theoretical character than those which attempt to evaluate particular tests. The objective of these investigations is, in general, to determine the various factors in ability. The most prominent theory on this point, of course, is Spearman's Two-Factor Theory, and many of the studies now being made have for their objective the verification of this theory or the discovery of a theory or a variation in theory as a

substitute for it. The successful prosecution of these theoretical studies will be very valuable in pointing out the abilities or constituents of ability which we should attempt to test.

STUDIES OF TECHNIQUE

A good many studies are being made from time to time for the evaluation of various features of the technique of mental testing. Most of these features of technique apply equally to the so-called educational test or any test of an objective character. One problem to which a number of studies are devoted is the comparative reliability or validity of the various forms of test questions or items; the most common of which are the completion test, the true-false test, the multiple-choice test, or the essay test or examination. Studies are being made to allow for or to eliminate guessing on such tests as the true-false. Others are devoted to the similar problem of determining the best method of scoring a test made up of such items. New devices are put out by means of which the individual being tested cannot tell beforehand which answer is the correct one, but knows as soon as he has made the correct response that it is the correct one. Other problems, of interest chiefly to specialists in mental tests, do not require mention.

APPLICATIONS OF TESTS

Tests have been found valuable as instruments of research into various psychological problems. They are used, for example, in the study of the question of the possibility of improving ability, either general or specific. They are also used to reveal differences in ability among groups of people, such as occupational groups, racial groups, and so on, and to undertake to determine whether these differences are native or acquired. They have also been used extensively as a means of tracing the mental growth of children or of individuals at different ages. A number of studies of these problems have been made during the past year.

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

(For further information, the reader may address the following organizations)

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| AMERICAN ANTHROPOLOGICAL SOCIETY,
45 West 45th Street, New York
City. | AMERICAN SOCIETY FOR PSYCHICAL
RESEARCH, 15 Lexington Ave., New
York City. |
| AMERICAN GENETIC ASSN., 306 Victor
Bldg., Washington, D. C. | AMERICAN SOCIOLOGICAL SOCIETY, 58th
St. and Ellis Ave., Chicago, Ill. |
| AMERICAN PHILOSOPHICAL SOCIETY,
104 S. 5th St., Philadelphia, Pa. | ENCYCLOPEDIA OF THE SOCIAL SCI-
ENCES, 100 Morningside Drive, New
York City. |
| AMERICAN PSYCHIATRIC ASSN., Al-
bany, N. Y. | NATIONAL COMMITTEE FOR MENTAL
HYGIENE, 370 Seventh Ave., New
York City. |
| AMERICAN PSYCHOPATHOLOGICAL ASSN.,
520 Commonwealth Ave., Boston,
Mass. | PSYCHOLOGICAL CORPORATION, 25 W.
39th St., New York City. |
| AMERICAN SOCIAL SCIENCE ASSN., 280
Madison Ave., New York City. | |

PART SEVEN

THE HUMANITIES

DIVISION XXV

LITERATURE AND LANGUAGE

HISTORY

BY PAUL H. BUCK

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THEMES AND TENDENCIES

Several general tendencies characterized historiography in the United States during 1931. Writers of the native scene concerned themselves with an ever broadening conception of American life. Interest in social and intellectual themes reached a point where it could rightly be considered as constituting the dominant influence in the field. It is also to be noted that few general works of merit appeared, the major contribution being made through monographic studies, limited in subject or in period. American writers are not painting the large canvas as ably as they are the small. Further, one observes, the professional historian did not have the field to himself. A feature of the year was the amount of good, if popular and sometimes light, material which came from the pens of writers who were chiefly journalists or novelists.

GENERAL HISTORIES

Among general histories, E. P. Oberholtzer published the fourth volume of his *History of the United States Since the Civil War* (Macmillan), covering the years from 1878 to 1888, a work detailed in narrative, mainly political, and not of striking

originality. A wealth of historical material was imbedded in the three additional volumes (vols. 4, 5 and 6), which were added to the *Encyclopædia of the Social Sciences* (Macmillan), edited by E. R. A. Seligman and A. Johnson, a gratifying monument to American scholarship. One volume was added to the cooperative *History of American Life* (12 vols., Macmillan), edited by A. M. Schlesinger and D. R. Fox. This was H. U. Faulkner's *The Quest for Social Justice* (Macmillan), surveying the period 1898 to 1914 in masterly fashion. This series, it can now be recognized, is not only establishing a new standard of excellency in editorship but it has also become a major influence in American historiography through its successful pioneering effort to synthesize the vast field of American social history. Of the broadest scope but on smaller scale is James Truslow Adams' *The Epic of America* (Little, Brown). Brilliant as this attempt to interpret American development undoubtedly is, scholars have not been willing to accept it as "epic." Among other general works, O. P. Chitwood, *History of Colonial America* (Harper) a book of merit, and E. F. Humphrey, *An Economic History of the United*

States (Century), should be mentioned.

SPECIAL STUDIES

Among special studies, two books have made exceptional contributions to a correct understanding of American history. J. D. Hicks' *The Populist Revolt* (Univ. of Min.) is a balanced, authoritative, and definitive account of the Populist movement. The author is especially to be commended for his catholicity of approach and the delicacy with which his particular theme is woven into the complexity of American life in the 'Eighties and 'Nineties. Frederick Bancroft's *Slave Trading in the Old South* (Furst), is a book of vigorous scholarship, challenging interpretation, and of convincing logic.

POLITICAL HISTORY

In the field of political history there was no work of outstanding significance. W. O. Lynch, *Fifty Years of Party Warfare* (Bobbs-Merrill) is a sane and careful summary of the period from 1793 to 1843. C. W. Thompson, *The Fiery Epoch, 1830-1877* (Bobbs-Merrill), is a lively narrative but unconvincing if not inaccurate in interpretation. R. S. Henry, *The Story of the Confederacy* (Bobbs-Merrill), retells a familiar story. D. L. Dumond in two books, *The Secession Movement* (Macmillan), and *Southern Editorials on Secession* (Century), gives a detailed and accurate analysis of the crisis of 1860 without changing the established views thereon. The valuable *Correspondence of Andrew Jackson* (Carnegie Institution), edited by J. S. Bassett, was continued through the years 1833 to 1838 by the appearance of volume five of the series. E. N. Wright's *Conscientious Objectors in the Civil War* (Univ. of Penn.), is a comprehensive and judicious study. B. F. Wright's *American Interpretations of Natural Law* (Harvard), is excellent. F. L. Allen, *Only Yesterday* (Harper), writers of the 1920's in the Mark Sullivan manner.

IMMIGRATION AND RACE RELATIONS

Some excellent work was done in the field of immigration and race relations. Especially significant is T. C. Blegen, *Norwegian Migration to America, 1825-1860* (Norwegian-American Hist. Assoc.), a book of rich scholarship. F. E. Janson, *The Background of Swedish Immigration, 1840-1930* (Univ. of Chic.) ably studies the causes of Swedish migration to America. E. R. Embree, *Brown America* (Viking), is a sympathetic but dispassionate review of the Negro's struggle for advancement. Other books worthy of mention are: A. L. Lebeson, *Jewish Pioneers in America, 1492-1848* (Brentano); I. Goldstein, *A Century of Judaism in New York* (New York: Cong. B'Nai Jeshurun); E. F. Roberts, *Ireland in America* (Putnam); and W. F. Newlin, *The Negro in Politics since 1868* (Stratford).

SOCIAL AND ART THEMES

On miscellaneous social themes, there was first of all, W. W. Sweet, *Religion on the American Frontier: The Baptists, 1783-1830* (Holt), the beginning of a significant new series on frontier religions. The history of music in America was treated in J. T. Howard, *Our American Music* (Crowell), the most comprehensive work on the subject to date; M. A. De W. Howe, *The Boston Symphony Orchestra* (Houghton, Mifflin); E. C. Moore, *Fifty Years of Opera in Chicago* (Horace Liveright); and J. S. Kendall, *The French Opera at New Orleans* (Southwest). G. C. D. Odell continued his detailed history of the theatre in New York by publishing volumes five, six and seven of *The Annals of the New York Stage* (Columbia) covering the years 1843 to 1865. Lewis Mumford surveyed American art between 1865 and 1895 in *The Brown Decades* (Harcourt Brace). Other books were E. Neuhaus, *The History and Ideals of American Art* (Stanford); R. J. Honeywell, *The Educational Work of Thomas Jefferson* (Harvard); J. Holliman, *American Sports, 1785-1835*

(Seeman); I. Garwood, *American Periodicals from 1850 to 1860* (Western Illinois State Teachers' Coll.); F. L. Babcock, *Spanning the Atlantic* (Knopf), a history of the Cunard Line; C. McCormick, *The Century of the Reaper* (Houghton, Mifflin); A. Train, *Puritan's Progress* (Scribner's); and E. Van Every, *Sins of America* (Stokes).

ECONOMIC HISTORY

In economic history, C. F. Ware, *The Early New England Cotton Manufacture* (Houghton, Mifflin), is original in research. K. Bruce, *Virginia Iron Manufacture in the Slave Era* (Century), rounds out the picture of the Old South. D. C. Barrett, *The Greenbacks and Resumption of Specie Payments* (Harvard), covers the decade 1862 to 1872. L. Adamie, *Dynamite* (Viking), studies class violence in American history.

DIPLOMACY

In diplomacy, F. L. Owsley, *King Cotton Diplomacy* (Univ. of Chic.), contributes much to an understanding of the Civil War. Dealing with the same period is D. Jordan and E. J. Pratt, *Europe and the American Civil War* (Houghton, Mifflin), an adequate study of public opinion. W. Millis, *The Martial Spirit* (Houghton, Mifflin) is a penetrating study of the war with Spain effectively written. R. W. Irwin, *Diplomatic Relations of the United States with the Barbary Powers, 1776-1816* (Univ. of North Car.), is comprehensive. An intensive monograph is C. M. Thomas, *American Neutrality in 1793* (Columbia). C. L. Jones, *Caribbean Prospects and Backgrounds* (Appleton), and J. F. Rippy, *The Capitalists and Colombia* (Vanguard), deal largely with contemporary problems. G. H. Danton, *The Cultural Contacts of the United States and China* (Columbia), surveys the period 1784 to 1844. S. F. Bemis, *The Hussey-Cumberland Mission and American Independence* (Princeton), treats of an episode of the American Revolution.

WESTERN HISTORY

Among books on the Trans-Mississippi West, W. P. Webb, *The Great Plains* (Ginn), is the best general survey of the region between the Mississippi and the Rocky Mountains that has yet appeared. G. W. Fuller, *A History of the Pacific Northwest* (Knopf), performs a like service for the Oregon country. A. B. Hulbert, *Forty-Niners* (Little, Brown) is a fascinating and accurate reconstruction of the Overland Trail to California. Other phases of the West were studied in H. E. Bolton, *Outposts of Empire* (Knopf), which relates the founding of San Francisco. V. Bari, *The Course of Empire* (Coward-McCann), California in Gold Rush days. O. C. Coy, *The Great Trek* (Powell), again the Gold Rush; R. E. Pinkerton, *Hudson's Bay Company* (Holt), a popular history; E. A. Wiltsee, *The Pioneer Miner and the Pack Mule Express* (Calif. Hist. Soc.); A. C. Laut, *Pilgrims of the Santa Fé* (Stokes); and W. J. Ghent, *The Early Far West* (Longmans, Green).

THE COLONIAL PERIOD

In the colonial period M. W. Jernegan, *Laboring and Dependent Classes in Colonial America* (Univ. of Chic.) deals with the economic and social status of slaves, indentured servants and poor folk generally. The students of Charles McLean Andrews presented him with a volume of *Essays in Colonial History* (Yale) which discusses effectively a number of topics. J. H. R. Yardley, *Before the Mayflower* (Doubleday, Doran) is an account of the earliest efforts to colonize Virginia. T. J. Wertenbaker, *Norfolk, Historic Southern Port* (Duke), is a history of the Virginia seaport with chief emphasis on the seventeenth century.

STATE AND LOCAL HISTORY

State and local history was enriched by F. B. Simkins and R. H. Woody, *South Carolina during Reconstruction* (Univ. of North Car.), an intensive study of political, social and economic conditions which

BIOGRAPHY

ably fills an important gap. Phases of the social history of New York City were entertainingly related in J. R. McCarthy, *Peacock Alley* (Harper), a history of the Waldorf-Astoria; A. S. Crockett, *Peacocks on Parade* (Sears), the city from 1890 to 1910; and A. F. Harlow, *Old Bowery Days* (Appleton). North Carolina received attention in two valuable monographs,—M. C. S. Noble, *A History of the Public Schools of North Carolina* (Univ. of North Car.), and D. H. Gilpatrick, *Jeffersonian Democracy in North Carolina, 1790-1816* (Columbia). I. Richman, *Ioway to Iowa* (State Hist. Soc. of Ia.), is an account of the state's settlement. Descriptive as well as historical in interest are, M. C. Boyd, *Alabama in the Fifties* (Columbia); H. K. Leiding, *Charleston* (Lippincott); A. L. Sioussat, *Old Baltimore* (Macmillan); and Paul Wilstach, *Tidewater Maryland* (Bobbs-Merrill).

EUROPEAN TOPICS

American scholars studying European topics produced several noteworthy books. Of unquestioned major importance is W. L. Langer, *European Alliances and Alignments, 1871-1890* (Knopf), a work of sterling scholarship, mature judgment and sound interpretation. C. C. Brinton, *The Jacobins* (Macmillan), is a remunerative investigation in the psychology of revolutionists. F. B. Artz, *France under the Bourbon Restoration, 1814-1830* (Harvard), is a scholarly analysis of French society in an hitherto untouched period. C. J. H. Hayes, *The Historical Evolution of Modern Nationalism* (Smith), interprets a major force in modern

life. Diplomatic themes are exploited in H. H. Howard, *The Partition of Turkey, 1913-1923* (Univ. of Okla.); E. M. Carroll, *French Public Opinion and Foreign Affairs, 1870-1914* (Century); O. J. Hale, *Germany and the Diplomatic Revolution, 1904-1906* (Univ. of Penn.); F. C. Jones, *Extra-territoriality in Japan, 1853-1899* (Yale); and R. S. McCordock, *British Far Eastern Policy, 1894-1900* (Columbia). Other books are, E. P. Cheyney, *Modern English Reform, 1800-1914* (Univ. of Penn.); C. W. Pipkin, *Social Politics and Modern Democracies* (2 vols., Macmillan); R. Soltau, *French Political Thought in the Nineteenth Century* (Yale); and J. W. Thompson, *The Middle Ages, 300-1500* (2 vols., Knopf).

LATIN AMERICA

Latin America was studied in W. H. Callcott, *Liberalism in Mexico* (Stanford), a survey of Mexican history from 1857 to 1929 with the development of liberalism as the central theme; W. J. Dennis, *Tacna and Arica* (Yale); and two books which essay the difficult task of interpretation and appraisal, W. Frank, *America Hispana* (Scribner's), and S. Chase and M. Tyler, *Mexico, a Study of Two Americas* (Macmillan).

REFERENCE GUIDE

A valuable book of reference was published under the joint editorship of W. H. Allison, S. B. Fay, A. H. Shearer, and H. R. Shearman, *A Guide to Historical Literature* (Macmillan), a successful attempt to list the best works in all fields of historical literature.

BIOGRAPHY

By MALCOLM OAKMAN YOUNG

REFERENCE LIBRARIAN, PRINCETON UNIVERSITY

POPULARITY OF BIOGRAPHY

In *The New York Times* of August 31, 1931, there was an article

giving the views of twelve leading publishers on the book industry. "The shock of hard times has made

American book readers serious-minded, and publishers discern a growing popularity of books of biography . . . The popularity of biographies is strong, and some point out that biographies are leading their lists in sales." During 1930, from the 8134 new books, 699 were biographies, a larger percentage than in 1929. Whether this class will be as large in 1931 cannot as yet be reckoned, but there is no doubt that it will approach the percentage.

COLLECTIVE BIOGRAPHY

The books of biography of a collective nature include one by the miniaturist Gamaliel Bradford, *The Quick and the Dead* (Boston, Houghton), including, among others, Roosevelt, Wilson, Coolidge, Edison, Mussolini and Lenin. Alfred P. Dennis' *Gods and Little Fishes* (Indianapolis, Bobbs) also includes Wilson, with other individuals. E. V. Hathaway's *The Book of American Presidents* is a good reference book (N. Y., Whitteley). A pseudonymous author, Dilly Tante, has a valuable compilation of facts in *Living Authors* (N. Y., Wilson).

BIOGRAPHIES OF THE PRESIDENTS

Washington.—The presidents fare well in the number of works of 1931. There are two high rating works on Washington: *Washington, 1732-75* (N. Y., Scribner) by Paul van Dyke, and one by Bernard Fay (Boston, Houghton). Minor works are H. L. Ritter, *Washington As a Business Man* (N. Y., Sears), and *The Mother of Washington*, Nancy B. Turner and Sidney Gunn (N. Y., Dodd).

Lincoln.—Two important works on Lincoln appeared: C. E. Macartney's *Lincoln and his Cabinet* (N. Y., Scribner), and Don C. Seitz's *Lincoln the Politician*. Edgar Lee Masters' *Lincoln* (N. Y., Dodd), though prominent, met with adverse criticism here and abroad. Two other books are J. T. Bayne's *Tad Lincoln's Father* (Boston, Little), and Ray-

mond Warren's, *The Prairie President* (Chicago, Reilly and Lee), the latter covering Lincoln's life up to the presidency.

Other Presidents.—The University of Pennsylvania Press publishes a needed life of Franklin Pierce, by Roy F. Nichols. The new and more favorable point of view in regard to Andrew Johnson is again apparent in George F. Forts *The Age of Hate: Johnson and The Radicals* (N. Y., Coward). A. L. Conger's *Rise of U. S. Grant* (N. Y., Cent.) is largely on the military side. Another interpretation of Garfield is by R. G. Caldwell (N. Y., Dodd). Denis T. Lynch, author of several credible biographies, has a work on Cleveland (N. Y., Liveright). Walter F. McCaleb, with free access to original documents, has written *Roosevelt* (N. Y., Boni). What promises to be an outstanding life of the same man, by H. F. Pringle, is being serialized in *The Outlook*, and will shortly be published by Harcourt, Brace & Co. The public life of Taft is covered in Francis Hale's *President and Chief Justice* (Phil., Dorrance). An original interpretation of Wilson by the pseudonymous Wells Wells is called *Wilson the Unknown* (N. Y., Scribner).

PUBLIC MEN

The Earlier Period.—The earliest figure among the men of public affairs is Penn: *The Making of William Penn*, by M. R. Brailsford (N. Y., Longmans). Aaron Burr has a biography by J. D. Kerkhoff (N. Y., Greenberg), while Robert I. Warshaw has written *Alexander Hamilton. First American Business Man* (N. Y., Greenberg). An episode little known is in the outstanding *Francis Dana: A Puritan Diplomat at the Court of Catherine the Great* (N. Y., Dial). The contemporary of Marshall, Joseph H. Hopkinson, has his first biography, by B. A. Konkle (Phil. U. of Pa.). The Supreme Court Justice, Stephen J. Field, is the subject of a book by Carl B. Swisher (Wash., Brookings).

The Later Period.—*Blaine of Maine*, by Charles E. Russell (N. Y., Cosmopolitan); *Thomas B. Reed*, by William A. Robinson (N. Y., Dodd), and *John G. Carlyle*, by J. A. Barnes (N. Y., Harper), are valuable additions to political history. *The Power and the Glory*, by Walter Davenport (N. Y., Putnam), is the first biography of Boise Penrose. *Master of Manhattan*, by Lothrop Stoddard (N. Y., Longmans) is the life of Richard Croker.

Contemporary.—Three lawyers of varying types are portrayed: *Clarence Darrow*, by C. Y. Harrison (N. Y., Cape & Smith); *Samuel Seabury*, by Walter Chambers (N. Y., Century); while *The Great Mouth Piece*, by G. Fowler, is the life of William J. Fallon (N. Y., Covie). W. G. McAdoo's autobiography is entitled *Crowded Years* (Boston, Houghton). There is to be expected at least one life of Franklin D. Roosevelt. The author is E. K. Lindly (Indianapolis, Bobbs). What may be one of the most important biographies of the year is the two volume *Life of Newton D. Baker*, by Frederick Palmer (N. Y., Dodd). Former Ambassador Frederic J. Stimson has written his memoirs, *My United States* (N. Y., Scribner).

MILITARY LEADERS

The group of military heroes include *Mad Anthony* (Wayne), by R. S. Holland (N. Y., Cent.); *Benedict Arnold*, by Oscar Shewin (N. Y., Cent.), *Sheridan*, by Joseph Hergesheimer (Boston, Houghton); *Light-horse Harry Lee*, by Thomas Boyd (N. Y., Scribner); *Decatur*, by Irwin Anthony (N. Y., Scribner); *Robert E. Lee*, by Allen Tate (N. Y., Minton); *Bedford Forrest*, by A. N. Lytle (N. Y., Minton); *Fighting Bob Evans*, by Edwin Falk (N. Y., Cape & Smith). Pershing's *My Experiences In The World War* (N. Y., Stokes), has been a large seller. Another memoir of the same period is General Robert Alexander's (N. Y., Macmillan). Herman Hagedorn's two volume *Leonard Wood*, (N. Y.,

Harper) is very readable and with provocative elements.

PIONEERS AND EXPLORERS

Agnes Laut's *Cadillac*, while not scholarly, is very readable (Indianapolis, Bobbs). Cortez is the subject of two works, one by H. M. Robinson (N. Y., Cent.), and one by Richard Friedenthal (N. Y., Harper). Leo V. Jacks' *La Salle* (N. Y., Scribner); George Godwin's *Vancouver* (N. Y., Appleton), are also in the group of explorers. Columbus' friend, Isabella of Spain, is written about by W. T. Walsh (N. Y., McBride). Fairfax Downey has a work on Burton (N. Y., Scribner), whose own *Arabia Deserta* is a classic.

WRITERS

Reviving interest in Cooper is shown by two biographies in one year: Henry W. Boynton's (N. Y., Cent.) and R. E. Spiller's (N. Y., Minton), both with critical analysis. Anna Seward, the 17th century poetess, is the subject of *The Singing Swan*, Margaret Ashmun (New-Haven, Yale). Annals of journalism are richly added to by a biography by F. F. Bond of *Mr. Miller of The Times* (N. Y., Scribner) and *When Dana was The Sun*, by C. J. Rosebault (N. Y., McBride). *Blue Ghost*, by Jean Temple is a study of Lafcadio Hearn (N. Y., Cape & Smith). Clara Clemens' book on her father is full of reminiscences (N. Y., Harper). Robert H. Davis' and A. B. Maurice's study of O. Henry is entitled *The Emperor of Bagdad* (N. Y., Appleton).

AUTOBIOGRAPHY

Very entertaining is Mary Roberts Rinehart's *My Story* (N. Y., Farrar). The historian, Henry Charles Lea, is the subject of E. S. Bradley (Phil., U. of Pa.). The journalist, muck-raker, and witness of much history making, Lincoln Steffens, has written his rich *Autobiography* (N. Y., Harcourt). An entertaining autobiography is Cecilia Beaux's, entitled *Background with Figures* (Boston, Houghton).

ARTISTS

Maud Howe Elliott has written the biography of her husband, John Elliott, the painter, many of whose letters are included. *Whistler, the Friend*, by Elizabeth R. Pennell, (Phil., Lippincott) is an interpretation to be well regarded. The architect, Stanford White, is the subject of C. C. Baldwin's book (N. Y., Dodd).

FINANCIERS AND INDUSTRIALISTS

Lewis Corey continues the Morgan saga in *The House of Morgan* (N. Y., Watt), J. K. Winkler who wrote *Morgan the Magnificent*, has this year written *Incredible Carnegie* (N. Y., Vanguard). A second book on Cyrus Hale McCormick is *The Century of the Reaper*, by Cyrus McCormick (Boston, Houghton). Henry Miller's life by E. F. Treadwell, is called *The Cattle King* (N. Y., Macmillan), while *Steaming Up* is the autobiography of Samuel M. Vaulain (N. Y., Brewer). J. C. Penny: *The Man with a Thousand Partners*, is by R. W. Bruere (N. Y., Harper).

SPIRITUAL LEADERS AND CRUSADERS

Georgia Harkness has a valuable study of John Calvin (N. Y., Holt). Wesley and Whitefield each has a new biography, the former by J. D. Wade (N. Y., Coward), the latter by C. D. Belden (Nashville, Cokesbury). Joseph Smith, by H. M. Beardsley (Boston, Houghton), adds to Mormon history. Quite a different character is Annie Besant, whose biography by G. M. Williams, is entitled *The Passionate Pilgrim* (N. Y., Coward). The crusader, Margaret Sanger, has written *My Fight for Birth Control* (N. Y., Farrar). The famous preacher and dean, Charles R. Brown, has written *My Own Yesterdays* (N. Y., Cent.). C. T. Burnett has done an excellent biography

of President Hyde of Bowdoin (Boston, Houghton).

MISCELLANEOUS

Henry Fairfield Osborn on the naturalist Cope is a scholarly work (Princeton, Princeton Univ. Press). The tragic death of the football coach Knute Rockne has occasioned at least five biographical volumes; one, his autobiography, edited by Mrs. Rockne (Indianapolis, Bobbs). An interesting sidelight on our civilization is *Life and Times of Lydia E. Pinkham*, by R. C. Washburn (N. Y., Putnam). The detective family of Pinkerton, is the subject of R. W. Rowan's book (Boston, Little). The world hero, Lindbergh and his father, comprise *The Lindberghs*, by L. and D. B. Haines (N. Y., Vanguard). The social and political rebel, Emma Goldman, has given us a vivid autobiography in *Living My Life* (N. Y., Knopf). R. P. T. Coffin's *Portrait of an American* (N. Y., Macmillan), the life of William Winship of Maine, is a worthwhile picture of an individual and a civilization.

FOREIGN SUBJECTS

There are several works on foreign subjects worth noting: Agnes Repplier's *Mere Marie* (N. Y., Doubleday), Samuel Putnam's *Margaret of Navarre* (N. Y., Coward), W. N. C. Carlton's, *Pauline, Favorite Sister of Napoleon* (N. Y., Harper). Percy Waxman's life of Toussaint L'Ouverture, entitled *The Black Napoleon* (N. Y., Harcourt), Maristan Chapman's *Imperial Brother, The Life of the Duc de Morny* (N. Y., Viking). Walter P. Hall's volume on Gladstone (N. Y., Norton), I. D. Levine's on Stalin (N. Y., Cosmopolitan), Margaret Goldsmith's on Zeppelin (N. Y., Morrow); Charles H. Sherill's *Bismarck and Mussolini* (Boston, Houghton); and Henry D. Sedgewick's *Alfred de Musset* (Indianapolis, Bobbs).

BY ELIZABETH T. PLATT

ASSISTANT LIBRARIAN, AMERICAN GEOGRAPHICAL SOCIETY

ANTARCTIC AND ARCTIC

Byrd Expedition.—Accounts of the Byrd expedition have continued to be published. Dr. Laurence Gould, second in command, tells of the flight to the Rockefeller Mountains and the sledge journey to the Queen Maud Mountains in *Cold* (Brewer, Warren and Putnam). He contributed a section on this to Commander Byrd's *Little America* (See 1930 AMERICAN YEAR BOOK) and published the major findings in "Some Geographical Results of the Byrd Antarctic Expedition" (*Geographical Review*, April, 1931.) J. S. O'Brien who accompanied Gould as topographer and dog driver has written of the journey in *By Dog Sled for Byrd* (Rockwell) and Paul Siple has written *A Boy Scout with Byrd* (Putnam).

Shackleton.—*Endurance, an Epic of Polar Adventure* (Cape and Smith) is F. A. Worsley's account of the Shackleton Antarctic Expedition.

Wilkins.—In *Under the North Pole, the Wilkins-Ellsworth Submarine Expedition* (Brewer, Warren and Putnam) Captain Sir Hubert Wilkins describes his preparations and outlines his plans for the trans-arctic voyage of the submarine *Nautilus* under the ice. Vilhjalmar Stefansson contributes a section on the History of the Idea; Simon Lake, builder of the *Nautilus*, Commander Sloan Danenhower and Professor H. U. Sverdrup have also contributed to the volume.

Andrée.—The diaries and journals of the Andrée polar flight are available in: *Andrée's Story: The Complete Record of his Polar Flight, 1897.* (Viking Press).

EUROPE

In a leisurely and subjective manner Marcel Aourousseau tells of a two months' walking trip which he and a companion made from Paris to Ma-

drid. The American edition is issued in two volumes: *Highway into Spain* and *Beyond the Pyrenees* (King).

ASIA

Far East.—Professor A. J. Toynbee tells of his travels from Constantinople to India, Singapore, Japan, Korea, China and home by Siberia in a *Journey to China, or Things Which are Seen* (Smith). G. N. Roerich's *Trails to Inmost Asia: Five Years or Exploration with the Roerich Central Asian Expedition* (Yale University Press) is an account of an expedition which went out primarily to create a pictorial record of lands and peoples of inner Asia, to survey the possibilities for new archeological exploration, and to gather ethnographic and linguistic material illustrating the culture of these regions. Vladimir Zenzinov, exiled to far northern Asia on the Indjirka River, writes of his experiences in *The Road to Oblivion* (McBride). Anna Louise Strong tells of her Central Asian travels in *The Road to the Grey Pamir* (Little, Brown).

Near East.—Bertram Thomas who recently crossed the great desert of Southern Arabia has written of his earlier Arabian excursions in *Alarms and Excursions in Arabia* (Bobbs-Merrill). There has been an American edition of Fridtjof Nansen's *Through the Caucasus to the Volga* (Norton), telling of a journey which he made in 1925 from Tiflis to Daghestan and over the Caspian to Astrakhan. Rosita Forbes' *Conflict, Angora to Afghanistan* tells of the racial, religious and political conflict, antagonism between educated and ignorant, between sexes, classes and generations which she found everywhere on her trip through the Near East (Stokes). *A Pagan's Pilgrimage* (Harcourt, Brace and Company)

is Llewelyn Powys' impressions of a journey to Palestine.

AFRICA

Julian Huxley traveling in East Africa in 1929 for the purpose of studying certain aspects of the education of the natives has written *Africa View* (Harper). Dr. Janet Miller sent out as a medical missionary to the "Hungry Country" in the Belgian Congo has written vividly of her experiences in *Jungles Preferred* (Putnam). A chronicle of events of a journey across Africa is P. L. Hoefler's *Africa Speaks. A Story of Adventure*. The Chronicles of the First Trans-African Journey by Motor Truck Central Equatorial Africa (Winston). *Across Africa on Foot*, by Ronald A. Monson (Dodd, Mead) describes the experiences of the author and companion on a walking trip from Capetown to Cairo. W. B. Seabrook's *Jungle Ways* (Harcourt, Brace) deals primarily with sorcery, magic, and cannibalism on the Ivory Coast and French West Africa. Life in Timbuktu is also described.

SOUTH AMERICA

Green Hell, Adventures in the Mysterious Jungles of Eastern Bolivia, by Julian Duguid (Century) is an account of the author's venturesome journey across the northern part of the Gran Chaco.

SOUTH SEAS

In *Paradise Quest* (Scribner) Lee S. Crandall narrates his adventures in New Guinea where he went to collect specimens of birds of paradise for the New York Zoological Society. W. W. Strickland's *Travel Letters from the Far East: A Sequel to "Sumba"* (Westermann) is a collection of travel letters from the Dutch East Indies. A. J. Villiers, chronicler of the sailing ship, has told the maritime history of Hobart, Tasmania in *Vanished Fleets: Ships and Men of Old Van Diemens Land*

(Holt). *Manga Reva, The Forgotten Islands*, (Bobbs-Merrill) by Robert Lee Eskridge is a tale of the author's eight months on an island in the Gambier Archipelago during which time he learned much of the natives—their beliefs and superstitions. Eric Muspratt's *My South Sea Island* (Morrow) is the adventures of a young Englishman on the island of San Cristoval in the Solomon Islands where he lived and practically held sway for six months. Hendrik De Leeuw's *Crossroads of the Java Sea* (Cape and Smith) tells of the author's life in Java, Sumatra, Borneo, Celebes, and Bali. R. J. Casey writes of *Easter Island: Home of the Scornful Gods* (Bobbs-Merrill).

MISCELLANEOUS

Two collections of travelers' anecdotes have appeared during the year. *Told at the Explorers' Club* (Bonifant) is a collection, edited by F. A. Blossom, of episodes from the careers of thirty-three explorers among them Wilkins, Stefansson, Lindbergh, Andrews and Bartlett. In *To The Ends of the World and Back*, J. Walker McSpadden published the results of interviews with members of the staff of the American Museum of Natural History who have told him of incidents in their field experiences. The flight of Post and Gatty is described by them in *Around the World in Eight Days, The Flight of the Winnie Mae* (Rand McNally). Cherry Kearton writes of his experiences on a tiny island scarcely four miles square in the south Atlantic Ocean inhabited by millions of penguins and birds: *The Island of Penguins* (McBride). H. M. Tomlinson's *Out of Soundings* (Harper), although not specifically a travel book, contains a number of travel essays of note. Leonard Outhwaite describes his journey across the Atlantic in a small vessel in *Atlantic Circle* (Scribner).

AMERICAN FICTION

BY MAY LAMBERTON BECKER

READER'S GUIDE, *Saturday Review of Literature*

NEW WORKS AND PRIZE WINNERS

The Good Earth.—If popular suffrage were to determine the most important novel published in America this year, the distinction would undoubtedly be conferred upon a book by a woman not born in America, about a country with which most of the vast number of its readers had had, up to this time of reading, little interest or concern. *The Good Earth*, by Pearl Buck, born in China of American missionary parents and living there save for the years of her American college course, was not so much the sensation of the year in American fiction as the object of the steadily gathering and growing approval of a widely distributed American audience. For once the "great public" found itself making the unaccustomed mental effort required to place itself in a country quite unfamiliar and to look at life with the eyes of a race whose world had been out of its range of experience, for the scene is Asiatic, white men have nothing to do with the action, and poverty reaches a pitch possible only, it would appear, in agricultural China. It has the deliberation of the revolving year, and carries along with it, at its own time, even readers accustomed to read rapidly or not at all.

The Harper Prize.—Apart from this practically first novel, the best work of the season has come from seasoned writers. There has indeed been far less encouragement than usual for beginners in a year when publishers took as few chances as possible on untried writers without a ready-made following. The Harper Prize, an award always awaited with an interest greater than that attending some prizes of larger money value, went to Robert Raynolds for a pioneering romance, *Brothers in the West*; *The Opening of a Door*, by George Davis, a group portrait of a

Canadian family living in Chicago, attracted almost as much critical commendation as the prize winner, and a clear and moving story of a hill-woman of West Virginia, *Thursday April*, another novel accepted from the results of this competition, showed that its young author, Alberta Pierson Hannum, is one to be kept in mind for the future.

First Novels.—Merle Colby's *All Ye People*, a picaresque record of the road in the America of 1810, crowded as it was even then with "Movers" going westward, should last in our libraries, perhaps less as a novel than as admirable documentation for one. *God in the Straw Pen*, by John Fort, leaves a strong sense of reality, both of spirit and of circumstance, in its picture of a religious revival in Georgia in 1830. Rollo W. Brown's *The Firemakers* opens a promised trilogy with a novel of coal-mining in southeastern Ohio and the efforts of two young people to escape from it. Elizabeth Corbett's light novel, *Young Mrs. Meigs*, deserves mention for running the age-limit for heroines to eighty, though even this does not touch the year's record for England, the eighty-eight of V. Sackville-West's *All Passion Spent*. Heroines, it would appear from a world survey, are staying up late for the party. Anne Green may live in Paris, but her special blend of humor and common sense is certainly American; for all its foreign setting her *Reader, I Married Him* has a native touch.

WORKS OF ESTABLISHED NOVELISTS

Edna Ferber.—Beyond these all the novels standing high this year in critical judgments and popular praise are by well-known authors, though for more than one of these it has been an off-year. Edna Ferber's *American Beauty* injured a fine plot, based upon a situation peculiar to

the New England countryside, by unconvincing speech and characterization, matters for which New England writers have set a high standard of comparison.

Willa Cather.—*Shadows on the Rock* enjoyed not only the cumulative popularity now to be expected from a steadily gathering audience, but on its own account earned a general gratitude for reminding a troubled and uncertain season that in time there is always present eternity.

Zona Gale and Edith Wharton were this year represented only by volumes of short stories, *Bridal Pond* and *Certain People* respectively, in each case containing some of the author's best work in this medium.

Dorothy Canfield, too, published only short stories, and with a foreign scene, *Basque People*.

Tarkington and Sinclair.—Booth Tarkington celebrated northern New England in *Mirthful Haven*. Upton Sinclair followed *Roman Holiday* with *Wet Parade*.

Susan Glaspell and Mary Austin.—Susan Glaspell in *Ambrose Holt and Family* produced what may fairly be called her best work since *The Glory of the Conquered*. Mary Austin laid the scene of her *Starry Adventure* in the land she has made her own, the country of Sante Fé.

Inez Haynes Irwin in *Family Circle* followed the fortunes of a New England clan for thirty years.

Stribling and Hergesheimer.—T. S. Stribling in *The Forge* told the story of an Alabama family before, during and after the Civil War; Joseph Hergesheimer, in the most successful of these extended records, carried a Kentucky family from the eighteenth to the late nineteenth century in *The Limestone Tree*, in which he returns to his best manner.

Roberts and Nathan.—*Buried Treasure*, by Elizabeth Madox Roberts, a quiet comedy of Kentucky primitives of the present day, forms an interlude to her larger works. The delicate art of Robert Nathan takes its own course, as usual, in his fantasia, *The Orchid*.

Bess Streeter Aldrich.—The vogue of *A Lantern in her Hand*, a novel of pioneer women's life in Nebraska by Bess Streeter Aldrich, has scarcely slackened in the Middle West since the book's publication more than a year ago; this year her *A White Bird Flying* dealt with this heroine's grand-daughter and her present-day problems in Nebraska.

Katherine Brush and Fannie Hurst.—Katherine Brush's small-town siren in *Red-headed Woman* and Fannie Hurst's self-sacrificing Egeria in *Back Street* qualified by popular favor for a possible reincarnation on the screen.

Mystery stories somewhat abated in number and considerably in merit, the only American writer to make much reputation in this line being the as yet pseudonymous "Ellery Queen".

Morley.—Christopher Morley's most important contribution to our literature this year—it may be in some respects his most important contribution—is classifiable as biography; *John Mistletoe*, a spiritual record and a story of earthly companions, is likely to outlast most of the fiction of the decade. Mr. Morley's fiction began and closed the year; opening it with a gay and fragile fantasy, *Rudolf and Amina*, he brought it to a close at Christmas with a spirited and happy satire, *Swiss Family Manhattan*, in which the Swiss Family concerned is wrecked from an airship upon the mooring-mast of the Empire State Building before the construction of the walls had reached that dizzy eminence. Mr. Morley seems to be the only writer, native or foreign, from whom the great public will gladly take satire; whether it takes it to heart is another matter. It may be because it feels that the writer's heart is in the right place.

Faulkner.—Of the "men of tomorrow", the leader, Ernest Hemingway, has this year published no long novel. A novelist for whom many critics claim leadership, William Faulkner, produced in *Sanctuary* the

most powerful and compelling proof of his ability in his own field that he has yet given to an audience steadily growing.

HUMOROUS FICTION

Light fiction, even humorous fiction, has done badly this year; American humor, unusually—but not unexpectedly—popular, has been savored mainly in unbookly books like *Boners*, a collection of school-boy mistakes, or *Ho-Hum*, a gathering of “news-breaks” from *The New Yorker*, and in “annuals” made from magazines specializing in humor of the broader and more sophisticated sort. One of the sensations of the year’s newsprint, and one that should go down in our social history, was the meteoric rise of the magazine *Ballyhoo*, devoted originally to systematic burlesque of the hitherto sacrosanct advertising columns, and to the jovial deflation of claims made by national advertisers.

CURRENT FICTION LIST

The Good Earth—Pearl Buck (Cape)
Brothers in the West—Robert Raynolds (Harper)
Opening of a Door—George Davis (Harper)
Thursday April—Alberta Pierson Hannum (Harper)
All Ye People—Merle Colby (Viking)
God in the Straw Pen—John Fort (Dodd, Mead)
The Firemakers—Rollo W. Brown (Coward)

Young Mrs. Meigs—Elizabeth Corbett (Century)
Reader, I Married Him—Anne Green (Dutton)
American Beauty—Edna Ferber (Doubleday)
Shadows on the Rock—Willa Cather (Knopf)
Bridal Pond—Zona Gale (Knopf)
Certain People—Edith Wharton (Appleton)
Basque People—Dorothy Canfield (Harcourt)
Mirthful Haven—Booth Tarkington (Doubleday)
Roman Holiday—Upton Sinclair (Farrar)
Wet Parade—Upton Sinclair (Farrar)
Ambrose Holt and Family—Susan Glaspell (Stokes)
Starry Adventure—Mary Austin (Houghton)
Family Circle—Inez Haynes Irwin (Bobbs)
The Forge—T. S. Stribling (Doubleday)
The Limestone Tree—Joseph Hergesheimer (Knopf)
Buried Treasure—Maristan Chapman (Viking)
The Orchid—Robert Nathan (Bobbs)
A White Bird Flying—Bess Streeter Aldrich (Appleton)
Red-Headed Woman—Katharine Brush (Farrar)
Back Street—Fannie Hurst (Cosmopolitan)
John Mistletoe; Swiss Family Manhattan—Christopher Morley (Doubleday)
Sanctuary—William Faulkner (Cape)

AMERICAN POETRY

By MAY LAMBERTON BECKER

READER'S GUIDE, *Saturday Review of Literature*

VACHEL LINDSAY

The first break in the ranks of the old guard of contemporary American poets since the too-early death of Amy Lowell, came just before the close of the year 1931 with the sudden untimely death of Vachel Lindsay on whom a public larger than

that attending any other living American poet had come to depend for vital messages, in verse and through the voice, on the joy and value of life in his native land. The numbers and wide distribution of his audience came not only from his books but from his public readings in every

part of the country, especially in schools, where his following was constant and devoted.

THE CURRENT OUTPUT

Collected Poems.—The *Complete Poems* of Robert Frost came out in a large single volume during the year, which saw also the award to Mr. Frost of the prize of the National Institute of Arts and Letters. Robert Underwood Johnson, officer of the Academy, published his *Poems of Fifty Years: 1880-1930*, reprints of seven successive volumes. Stephen Vincent Benét's *Ballads and Poems* collects in one volume ballads, sonnets and lyrics from three earlier books, 1915-1930, now out of print, and includes some new poems.

Robinson and Millay.—Edwin Arlington Robinson's *Matthias at the Door*, a narrative book-length poem in his familiar manner, goes deep into psychological values, expressed with richness of feeling and beauty of language; it is quite possible that this work may rank among his highest achievements. Certainly the only other volume of verse for the year arousing so much interest was Edna St. Vincent Millay's *Fatal Interview*, made altogether of sonnets (52 in number), a form in which she has long since proved her skill and power.

Various Works.—Percy MacKaye's daughter, Christy MacKaye, made her début with *Wind in the Grass* for which E. A. Robinson provided a preface. Leonora Speyer's *Naked Heel*, Babette Deutsch's *Epistle to Prometheus*, Conrad Aiken's *Coming Forth By Day of Osiris Jones*, Lew Saret's *Wings Against the Moon*, Franklin P. Adams's *Christopher Columbus* and Dorothy Parker's *Death and Taxes* sustained established reputations. Peggy Bacon's brief *Animosities*, W. R. Hard's *Salt of Vermont* and May Lewis' *Red Drumming in the Sun* stand out among first volumes of verse.

The narrative poem, of book-length, seems to have been retained in favor in America, chiefly by E. A. Robinson, until Benét's *John Brown's Body* returned it to popularity; at least several examples of this form of poetic expression have appeared within the year, notably Mark Van Doren's *Jonathan Gentry*, James Whaler's *Green River*, a biographical poem founded on the life of Constantine Rafinesque, an explorer of old Kentucky; and Edna Lou Walton's *Jane Matthews*.

Humor and Grotesquerie.—The prevailing interest in humor and general grotesquerie, not unnatural in a year when laughter must in general be provided by strong-arm methods, was displayed in the success of *Hard Lines* and *Free Wheeling* by Ogden Nash to whose ability to make words rhyme by bumping their heads together is added a sturdy common-sense.

CONCLUSIONS

There has been probably less poetry published and certainly less of it sold this year in America than for some years past, but most of this has been read by a fairly wide and welcoming audience. Miss Millay's and Mr. Robinson's volumes amounted to the events of the season, and nothing had the vogue of *John Brown's Body* in its year. If it be true that poetry is read only by those who write—or try to write—poetry, the prospects for an American audience in the not-too-far future would seem to be assured. For school children all over the country, especially in high school years, are receiving an encouragement toward creative work that has set young America to singing. The students seem to be the only singers still using free verse; our professional poets have for the most part come back into the fold, and even the sonnet is once more firmly in favor.

CRITICISM AND BELLES LETTRES

By R. N. CUNNINGHAM, JR.

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EXPOSITION

The literature of Criticism and Belles Lettres is all too likely to be considered a kind of pot-pourri of remnants not easily served in any of the more usual dishes. This varied and anomalous character obviously renders definition and limitation difficult. Accordingly it behooves a reviewer to be wary. Works concerned primarily with art, biography, drama, music, philosophy, research scholarship, science, and sociology are omitted from this article since these subjects are treated elsewhere within the YEAR BOOK. If in the succeeding paragraphs we seem to have wandered into these fields, it is because the critical content or the quality of the writing seemed to justify the excursion. In the present selective survey the comments aim in the main to be descriptive rather than critical.

LITERARY CRITICISM

"Axel's Castle."—Once again variety is a distinctive characteristic of the year's critical estimates. Edmund Wilson, *Axel's Castle* (Scribner) contains a series of illuminating and significant essays which have earlier appeared in the *New Republic*. The author calls the book "a Study in the Imaginative Literature of 1870-1930." With candor and boldness he studies writers and the nature of modern letters, intimating that "literature has been living for a long time in the enchanted palace of Symbolism."

"Counter Statement."—In *Counter Statement* (Harcourt, Brace) Kenneth Burke ranges from an exposition of the motives of such writers as Gide, Mann, De Gourmont, Flaubert, and Pater to a clarification of critical terminology. He observes in explaining his title that each principle which he advocates "is matched

by an opposite principle flourishing and triumphant to-day."

The Poets.—*American Poetry from the Beginning to Whitman* (Harcourt, Brace), edited by Louis Untermeyer, is an anthology which includes an historical preface and thumb-nail sketches fusing biography with literary criticism. Arthur Machen demonstrates in *Tom O'Bedlam and His Song* (R. W. Ellis: Georgian Press, Limited Ed., 1930) that "far from being mad the song deals with the same perceptions that came to Poe and Coleridge." A study of a mystic is presented in Emily S. Hamblen's *On the Minor Prophecies of William Blake* (Dutton, 1930) with an introduction by S. Foster Damon.

The Critics.—*Literary Criticism in America* (Dial) by George E. De Mille makes a survey rather than an exhaustive study of American critics from Lowell, Poe, and Emerson to Sherman. It brings together the new perspectives with which we have come to look at our criticism. J. E. Spingarn in *Creative Criticism and Other Essays* (Harcourt, Brace) clarifies the position which he has set forth earlier in some of his essays. He denies that he has been an advocate of "estheticism" or "impressionism," and although deploring parrot-like echoes emphasizes the need of "disciplined self-expression."

Perry's "Emerson."—Bliss Perry's *Emerson Today* (Princeton Univ. Press) contains the Vanuxem Lectures delivered at Princeton University in 1931 by the Professor of English Literature, emeritus, of Harvard University.

Mencken and Shaw.—Of a very different temper is Benjamin De Casseres, *Mencken and Shaw* (Silas Newton, 1930), a work which the author says "does not analyze or weigh, but apotheosizes or slays."

Canby's "Classic Americans."—Henry Seidel Canby has written in *Classic Americans* (Harcourt, Brace) a series of essays on American writers from the Colonial period to Whitman. The work was originally planned as a history of American literature in the light of social and intellectual backgrounds.

American Thought.—Three critical interpretations of the American thought and scene in literature are: *American Literature as an Expression of the National Mind* (Holt) by Russell Blankenship, said to be a pupil of V. L. Parrington; *American Humor, A Study of the National Character* (Harcourt, Brace) in which Constance Rourke, author of *Troupers of the Gold Coast*, sets forth with unusual power of critical synthesis the thesis that "humor is basically an expression of the folk epic spirit"; and *The New Regionalism in American Literature* (Univ. of Washington Bookstore, 1930), an essay by Carey McWilliams, exposing the fallacy of regional writing.

Miscellaneous.—Two works of a more general sort are Ashley H. Thorndike's *The Outlook for Literature* (Macmillan) and Philo M. Buck's *The Golden Thread* (Macmillan), an introduction to world literature. *The English Bible as Literature* (Houghton, Mifflin) contains essays by a distinguished Dante scholar. Finally prose fiction and the theatre are the respective subjects of G. C. Knight's *The Novel in English* (R. R. Smith), a survey of the English and American novel from the Eighteenth century on; and John Mason Brown's *Upstage* (Norton, 1930), a treatment of the playwright, the actor, the designer, and the director, handled in an incisive, humorous, critical style.

BIOGRAPHICAL REMINISCENCES

Informal sketches and reflections, often biographical or autobiographical in nature, have been surprisingly numerous during the current year. The influence of biography proper seems unquestionable. Alfred Pearce Dennis in *Gods and Little*

Fishes (Bobbs-Merrill) depicts episodes in the careers of such persons as Brookhart, Wilson, Coolidge, Mussolini, and Tarkington, who "are neither gods nor little fishes." William A. Croffut's *An American Progression 1855-1914* (Little, Brown) is a personal chronicle of interview with presidents, poets, and journalists. Brief studies of public characters also make up Gamaliel Bradford's *The Quick and the Dead* (Houghton, Mifflin). Hamlin Garland's *Companions on the Trail* (Macmillan) carries forward from 1899 his *Roadside Meetings*. In an autobiographical vein it characterizes "some of the enthusiasms, fashions, and developments of literature and art" between 1900 and 1914. Christopher Morley also verges upon the autobiographical in his *John Mistletoe* (Doubleday, Doran), a book filled with the anecdotes and informalities of pleasant life. Several others are of much the same vintage. Charles S. Brooks, *Prologue* (Harcourt, Brace), which he styles a "narrative of essays" and Cecilia Beaux, *Background with Figures* (Houghton, Mifflin) are recollections of what life has offered the authors. *I Remember* (R. R. Smith, 1930) by Opie Read is a vigorous and picturesque record of the experiences of an American journalist. Emily Clark's *Innocence Abroad* (Knopf) sounds a quite different note. In this she presents sketches of some of those who lent aid of one sort or another to *The Reviewer*.

THE FAMILIAR ESSAY

Besides these informal biographical reminiscences there has been no dearth of pleasant observations in book form on places, manners, and men. Specific regions have afforded subjects for several collections. Alexander Sprunt, Jr. in *Brothers of the Silences* (Dodd, Mead) follows Archibald Rutledge's essays of last year in treating of nature and wild life in the Carolinas. The spirit of *A Victorian Village* is carried on in Lizette Woodworth Reese's *The York Road* (Farrar & Rinehart). Cornelius Weygandt's *The Wissahickon Hills*

Univ. of Pa. Press, 1930) is a collection of descriptive and reflective essays having to do with the lovely hill country to the north of Philadelphia. *East of the Hudson* (Knopf) by J. Brooks Atkinson deals in a reminiscent manner with New York and the country near it. A. W. Bell, *Cape Cod Color* (Houghton, Mifflin) is concerned with nature study and local color on the Cape. Of a somewhat different order is *The Book of the Fly-Rod* (Houghton, Mifflin), edited by Hugh Sheringham and J. C. Moore, which contains graceful and informative essays on fishing by Henry Van Dyke and others.

FOLKLORE

J. Frank Dobie, *Coronado's Children* (Southwest Press, 1930) is a compilation of tales about "matchless mustangs, lost canyons, and mocking mirages of the desert." In *Stagecoach and Tavern Tales of the Old Northwest* (Arthur Clark), edited by L. P. Kellog, H. E. Cole reveals aspects of the life between Lake Michigan and the Mississippi during the middle of the last century. Two other collections of folklore are: *Black Genesis* (Macmillan) by S. G. Stoney and G. M. Shelby, and *Folk-Song: A Regional Miscellany* (Univ. of Oklahoma Press, 1930). Ruth Firor's *Folkways in Thomas Hardy* (Univ. of Pa. Press) is concocted of quite different ingredients. The author has brought to light not only the rich folk backgrounds of Hardy's novels, tales, and poems but has put together a book inherently fascinating in itself.

THE AMERICAN MIND AND SCENE

Although the controversy over humanism has subsided to a degree, there has hardly been a diminution in the number of those who would criticize the life and thought of the day and prescribe for its ills. *Living Philosophies* (Simon & Schuster) is a symposium of views by twenty-two so-called representative modern thinkers. Irwin Edman, *The Contemporary and His Soul* (Jonathan

Cape) is a group of philosophical essays by a Professor of Philosophy at Columbia University. In *A Pagan's Pilgrimage* (Harcourt, Brace) Llewelyn Powys advances a view which has been called "constructive skepticism." Other studies of this kind are: H. A. Overstreet, *The Enduring Quest* (Norton) and George Santayana, *The Genteel Tradition at Bay* (Scribner). The temper of the times is treated in James Truslow Adams's *The Tempo of Modern Life* (Boni). Sherwood Anderson, *Perhaps Women* (Liveright) advances the thesis that modern man cannot escape the machine. *Behold America* (Farrar & Rinehart), a symposium of thirty-three writers, edited by S. D. Schmalhausen; *What This Country Needs* (Covici-Friede) by Jay Franklin; and *The Rediscovery of Jones* (Little, Brown) by Simeon Strunsky, also diagnose the times. More clearly descriptive of the American scene is Arthur Train's *Puritan's Progress* (Scribner), a mélange of facts about Puritan Sabbaths, old hotel menus, and New York Society. In somewhat the same vein are: C. H. Towne, *This New York of Mine* (Cosmopolitan); P. H. Boynton, *The Rediscovery of the Frontier* (Univ. of Chicago Press); Stuart Chase and Marian Tyler, *Mexico: A Study of Two Americas* (Macmillan), and *Pictures and People* (Harper), a transatlantic exchange between Roger Hinks in London and Naomi Royde-Smith in New York, Boston, and Philadelphia.

MISCELLANEOUS WORKS

Henshaw Ward's *Builders of Delusion* (Bobbs-Merrill) is a "study of the habits of the human mind" by the author of *Exploring Nature*. In *Adventures in Genius* (Simon & Schuster), Will Durant takes his stand with Carlyle in viewing history as "properly the history of its great men." *Law and Literature and Other Essays and Addresses* (Harcourt, Brace) contains seven papers by Judge Benjamin N. Cardozo. A convenient manual on reading, print-

ing, and publishing is offered in *The Booklover's Diary* (E. V. Mitchell, 1930), edited by J. T. Soby; and the *Colophon* continues its splendid articles for book collectors. Christopher Morley, *A Book of Days for 1931* (John Day) is a calendar of various quotations. Finally *American*

Caravan, IV (Macaulay), edited by Alfred Kreymborg, Lewis Mumford, and Paul Rosenfeld, in its various offerings, including essays and prose, forces us again to question whether we have not been too hasty in passing over the initial suggestion of a potpourri of writings.

ENGLISH LANGUAGE AND LITERATURE

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GENERAL

The present survey of American research in the field covered, like its predecessors, is selective. Many studies concerned with details too technical for the layman are omitted although they are often of considerable importance to the philologist and the literary historian. A complete list of such contributions will be found in the author's bibliography in the March issue of the *Publications of the Modern Language Association (PMLA)*.* The reader should also consult J. P. Willard's *Progress of Medieval Studies in the United States* (Bulletin No. 9, Boulder, 1931), Hardin Craig's "Recent Literature of the English Renaissance" (*SP*), and R. S. Crane's "English Literature, 1660-1800: A Current Bibliography" (*PQ*), the last two of which include foreign as well as American work.

THE ENGLISH LANGUAGE

One of the most interesting books in the field of linguistics that have appeared for some time is John W. Spargo's translation from the Danish

of Holger Pedersen's *Linguistic Sciences in the Nineteenth Century: Methods and Results*. Recent progress in the field is surveyed by Kemp Malone in "Some Linguistic Studies of 1929 and 1930" (*MLN*). George O. Curme has published the first installment on a *Grammar of the English Language* which will be written in collaboration with Hans Kurath. The present volume is the work of Professor Curme and deals with Syntax. A special syntactical study by Morgan Callaway treats *The Temporal Subjunctive in Old English* (Texas). John C. Smock's *The Greek Element in English Words* has appeared under the editorship of Percy W. Long. Klara H. Collitz has studied *Verbs of Motion in Their Semantic Divergence*. Besides numerous special points which form the subject of notes in the philological journals and which space does not permit mention of here, attention may be called to M. M. Mathews' *The Beginnings of American English*, a collection of essays and observations on American English that have appeared during the last two centuries.

GENERAL LITERATURE

The last volume published by the late Professor Edwin A. Greenlaw is a suggestive monograph called *The Province of Literary History* (Johns Hopkins). Of more popular character is Max Eastman's *The Literary Mind: Its Place in an Age of Science*.

*Periodicals are cited under the following abbreviations, the reference being always to the volume for the year covered by this review:—*PMLA*, *Publications of the Modern Language Association of America*; *MP*, *Modern Philology*; *MLN*, *Modern Language Notes*; *MLR*, *Modern Language Review*; *JEGP*, *Journal of English and German Philology*; *SP*, *Studies in Philology*; *PQ*, *Philological Quarterly*; *RES*, *Review of English Studies*; *RR*, *Romanic Review*. Titles appearing as theses or as the publications of universities are followed where possible by the name of the university.

Two attempts have been made recently to evaluate the so-called modern humanism, P. H. Boynton's *The Challenge of Modern Criticism: Tradition, Criticism in Humanism* and Ernest Bernbaum's "The Practical Results of the Humanistic Theories" (*Eng. Jour.*). J. E. Spingarn's *Creative Criticism and Other Essays* now appears with four additional essays. Chas. H. Gray's *Theatrical Criticism in London to 1795* (Columbia) treats literary criticism in one of its special aspects. Several interesting volumes have appeared in the course of the year on the nature of poetry and its development in England. Roland B. Lewis's *Creative Poetry, A Study of Its Organic Principles*, R. B. Crum's *Scientific Thought in Poetry* (Columbia), H. W. Garrod's *Poetry and the Criticism of Life*, and J. O. Beatty and J. W. Boyer's *Famous Editions of English Poets* (an anthology) may be selected for special mention. Walter J. Graham has brought out a sizeable volume on the *English Literary Periodicals*. Chas. A. Dinsmore's *The English Bible as Literature* and E. D. Coleman's *The Bible in English Drama* treat related subjects. Mention may be made here of the *Royster Memorial Studies* edited by the former colleagues of the late James Finch Royster. Two items of special usefulness have appeared: "Bibliographical Guides for the Study of English," by Arthur G. Kennedy (*Papers of the Bibl. Soc. of Amer.*), and an account of the special "Huntington Library Collections" by George Sherburn (*Huntington Library Bull.*). *The Comedy of Manners from Sheridan to Maugham* forms the subject of an interesting study by Newell W. Sawyer (Pennsylvania). Grant C. Knight surveys *The Novel in English* and Ernest Bernbaum discusses "Recent Works on Prose Fiction before 1800" (*MLN*). *The Sailor in English Fiction and Drama 1550-1800* has been traced by Harold F. Watson. Maximilian Rudwin has gathered together into book form his interesting series of articles on *The Devil in Legend and Literature*.

OLD ENGLISH LITERATURE (450-1150)

Bibliographical helps to the study of Old English are neither numerous nor up-to-date, and the compilation of A. H. Heusinkveld and E. J. Bashe, *A Bibliographical Guide to Old English: A Selective Bibliography of the Language, Literature, and History of the Anglo Saxons* (Iowa), is to be welcomed. Kemp Malone has reviewed briefly some "Studies in Old English Poetry, 1920-1930" (*PQ*) and contributed articles on "Ealhild" (*Anglia*) and "On Wulfstan's Scandinavia" (*Royster Mem. S.*). G. P. Krapp's *The Junius Manuscript* forms the first volume in a collective edition which will include all Old English poetry. *A Comparative Study of the Beowulf and the Aeneid* has been published by T. B. Haber.

MIDDLE ENGLISH LITERATURE (1150-1500)

Anglo-Norman Writers.—J. C. Russell has gathered from the Close and Patent Rolls and other printed records mention of "Some Thirteenth Century Anglo-Norman Writers" (*MP*). J. S. P. Tatlock discusses "Contemporary Matters in Geoffrey of Monmouth" (*Speculum*). Helen P. South has published *The Proverbs of Alfred Studied in the Light of the Recently Discovered Maidstone Manuscript* (Bryn Mawr diss.), including a critical edition of the text. Wilbur Gaffney examines "The Allegory of the Christ-Knight in *Piers Plowman*" (*PMLA*). Walter Oliver in "King Horn and Suddene" (*PMLA*) offers some interesting observations tending to localize the romance in southern Scotland. Paul J. Ketrick has published a dissertation on *The Relation of Gologros and Gawane to the Old French Percival* (Cath. U. of Amer.) and J. R. Hulbert offers a preliminary study toward establishing "The Text of *The Siege of Jerusalem*" (*Royster Mem. S.*). Miss H. E. Allen continues her studies of Rolle in *English Writings of Richard Rolle, Hermit of Hampole*, consisting of carefully edited selec-

tions with an admirable introduction. J. R. Hulbert offers "A Hypothesis Concerning the Alliterative Revival" (MP).

Medieval Drama.—In the field of the medieval drama Carleton Brown records "An Early Mention of a St. Nicholas Play in England" (*Royster Mem. S.*), R. H. Wilson considers further the relation between "The Stanzaic Life of Christ and the Chester Plays" (SP), and Effie MacKinnon offers "Notes on the Dramatic Structure of the York Cycle" (SP). Marion C. Carroll and Rosamund Tuve publish "Two Manuscripts of the Middle English *Anonymous Ryming Chronicle*" (PMLA). Archer Taylor's *Edward and Sven i Rosengård* is, as its sub-title indicates, *A Study in the Dissemination of a Ballad*.

Chaucer.—Among the more important contributions to Chaucer study may be mentioned John L. Lowes' lecture, Chaucer; "A Collection of Chaucer Allusions" (SP), running to more than a hundred, by R. P. Bond, J. W. Boyer, C. B. Millican, and G. H. Smith; Sanford B. Meech's "Chaucer and the *Ovide Moralisé*—A Further Study" (PMLA); J. A. S. McPeck's "Did Chaucer Know Catullus?" (MLN), answered in the negative; and J. M. Manly's "Tales of the Homeward Journey" (*Royster Mem. S.*) suggesting that the *Parson's Tale* was meant to close the homeward journey and that the *Manciple's Tale* was intended to begin that journey.

MODERN ENGLISH LITERATURE (SINCE 1500)

Elizabethan Literature.—F. O. Matthiessen deals with a large and important subject in *Translation, An Elizabethan Art*, and L. B. Wright continues his studies in Elizabethan literary environment in "Handbook Learning of the Renaissance Middle Class" (SP), "The Reading of Renaissance English Women" (*Royster Mem. S.*), and "The Elizabethan Middle-Class Taste for History" (*Jour. of Mod. Hist.*). Carroll Camden

writes at length on "Elizabethan Almanacs and Prognostications" (*Library*). Hyder Rollins continues his reprints of Elizabethan texts with *The Phoenix Nest* (1594) while C. R. Baskerville has edited for the Huntington Library a facsimile reprint of *Plutarch's Quyetie of Mynde, translated by Thomas Wyat*. R. A. Houk edits Hooker's *Ecclesiastical Polity, Book VIII* and establishes its authenticity.

Sidney and Spenser have received much attention. William D. Briggs discusses the "Political Ideas in Sidney's *Arcadia*" (SP). R. B. Levinson in "The 'Godlesse Minde' in Sidney's *Arcadia*" (MP) traces some of Sidney's ideas to Cicero. Josephine W. Bennett in "The Theme of Spenser's *Four Hymnes*" (SP) shows the influence of Pico della Mirandola's *Commento*, and W. P. Cumming discusses "The Influence of Ovid's *Metamorphoses* on Spenser's 'Mutabilitie' Cantos" (SP). Spenser's relation to contemporary affairs is reflected in Frederick Hard's "Spenser and Burghley" (SP), I. L. Schulze's "Spenser's Belge Episode and the Pageants for Leicester in the Low Countries, 1585-86" (SP), and B. Stirling's "Spenser and Thomas Watson, Bishop of Lincoln" (PQ). E. A. Strathmann considers "The Allegorical Meaning of Spenser's *Muipotmos*" (PMLA) while Emma M. Denkinger in "Spenser's *Muipotmos* Again" (*ibid.*) examines another allegorical interpretation. Special points are raised in L. F. Ball's "The Morality Theme in Book II of *The Faerie Queene*" (MLN), F. M. Padelford's "Spenser and The Pilgrimage of the Life of Man" (SP), and Viola B. Hulbert's "A Possible Christian Source for Spenser's Temperance" (SP).

Elizabethan drama receives its usual share of attention from scholars. S. A. Small studies "The Political Import of the Norton Half of *Gorboduc*" (PMLA), Otto Heller offers *Faust and Faustus: A Study of Goethe's Relation to Marlowe* (Washington), and A. M. Sampley examines "The Text of Peele's *David and Beth-*

sabe" (PMLA). Thomas Lodge: *The History of An Elizabethan*, by N. B. Paradise, treats one of the more respectable of the "predecessors of Shakespeare." General questions affecting the drama of the period are treated in Doris Fenton, *The Extra-Dramatic Moment in Elizabethan Plays before 1616* (Pennsylvania), A. M. Myers, *Representation and Misrepresentation of the Puritan in Elizabethan Drama* (Pennsylvania), R. V. Lindabury, *A Study of Patriotism in the Elizabethan Drama* (Princeton), and Lily B. Campbell, "Theories of Revenge in Renaissance England" (MP).

Shakespeare.—A number of books on Shakespeare of unusual interest have appeared in the course of the year. Leslie Hotson in *Shakespeare versus Shallow* publishes records relating to an unknown incident in Shakespeare's career and identifies in them the original of Justice Shallow in the *Merry Wives*. T. W. Baldwin in *William Shakespeare Adapts a Hanging* attempts to identify the characters and incidents out of which the *Comedy of Errors* grew. W. W. Lawrence's *Shakespeare's Problem Comedies* offers important essays in interpretation. Madeleine Doran presents a penetrating study of *The Text of King Lear* (Stanford). J. Q. Adams has followed his edition of *Hamlet* with one of *Macbeth*, marked by the same full commentary, while Hardin Craig's *Shakespeare*, as its sub-title indicates, is "A Historical and Critical Study, with annotated texts of twenty-one plays." Henry W. Farnham's *Shakespeare's Economics* is a study of Elizabethan conditions and views, by an economist. Space does not permit the mention of individual articles except S. A. Tannenbaum's "Annual Bibliography of Shakespeareana for 1930" (*Shakespeare Assoc. Bull.*).

Shakespearean Contemporaries.—Concerning two of Shakespeare's contemporaries Professor Hotson has also discovered a record of the stabling of Henry Porter by John Day,

and has published it under the title "The Adventure of the Single Rapier" (*Atlantic Mo.*). O. T. Campbell points to a close parallel to the situation in Jonson's comedy in "The Relation of *Epicoene* to Aretino's *Il Marescalco*" (PMLA), W. D. Dunkel offers evidence favoring Middleton in "The Authorship of *The Revenger's Tragedy*" (PMLA). The present writer, in "Further Facts about James Shirley" (*RES*), has published the record of Shirley's marriage, identified his wife as a daughter of the Mayor of St. Albans, and established the fact of his having been a priest.

THE SEVENTEENTH CENTURY

Seventeenth century studies include Alwin Thaler's "Sir Thomas Browne and the Elizabethans" (*SP*), P. Jordan-Smiht's *Bibliographia Burtoniana: A Study of Robert Burton's the Anatomy of Melancholy, with a Bibliography of Burton's Writings*, and the same writer's edition of Burton's *Philosophaster* with an English translation. Hyder E. Rollins has published the first volume of *A Poetical Rhapsody 1602-1621* and volumes 5 and 6 of *The Pepys Ballads*. The Columbia edition of *The Works of John Milton*, to be completed in eighteen volumes, has been inaugurated with the publication of the first two volumes. H. F. Fletcher offers *Contributions to a Milton Bibliography, 1800-1930* (Illinois) as a supplement to the *Reference Guide* published by Stevens last year. E. W. Kirby's *William Prynne: A Study in Puritanism*, F. S. McCamic's *Sir George Etherege: A Study in Restoration Comedy*, and R. G. Ham's *Otway and Lee: Biography from a Baroque Age* are interesting biographical studies. A. F. White traces the history of "The Office of Revels and Dramatic Censorship during the Restoration Period" (*Western Reserve Bull.*). A. H. Nethercot has gathered the results of his long study of Cowley into book form under the title *Abraham Cowley, the Muse's Hannibal*. P. W. Souers writes on *The Matchless*

Orinda (Katharine Philips) and J. H. Hanford reveals some interesting relations between "Pepys and the Skinner Family" (*RES*). Dryden studies include R. F. Jones's "The Originality of *Absalom and Achitophel*" (*MLN*), L. I. Breduold's "Dryden and the University of Oxford" (*MLN*), and E. T. Riske's "Dryden and Waller as Members of the Royal Society" (*PMLA*).

THE EIGHTEENTH CENTURY

English Biography in the Eighteenth Century is the title of an interesting volume by Mark Longaker. R. W. Babcock traces *The Genesis of Shakespeare Idolatry 1766-1799. A Study in English Criticism of the Late Eighteenth Century*, and John W. Draper has compiled *Eighteenth Century English Aesthetics, a Bibliography*. Three more volumes of the *Private Papers of James Boswell* have appeared, under the editorship of F. A. Pottle, who, with Marion S. Pottle has also prepared a catalogue of the collection under the title *The Private Papers of James Boswell, from Malahide Castle in the Collection of Lt.-Colonel Ralph Heyward Isham: A Catalogue*. W. K. Chandler discusses "The First Edition of the *Dunciad*" (*MP*). Alice I. P. Wood has edited *The Grumbler, An Adaptation by Oliver Goldsmith*, a farce known hitherto only from one scene and here printed from a manuscript in the Huntington Library. H. W. Taylor's "Fielding upon Cibber" (*MP*) gives evidence that Fielding's satire was not merely directed against Cibber's professional activities, and A. D. McKillop discusses "The Personal Relations between Fielding and Richardson" (*MP*). M. S. Petersen has published a monograph on the Irish playwright Robert Jephson, called *Robert Jephson (1736-1803), A Study of His Life and Works* (Nebraska). Benjamin Rand has edited Locke's *Essay concerning the Understanding*. A minor problem is interestingly dealt with by I. O. Wade in "Destouches in England" (*MP*), the materials being drawn from unpublished cor-

respondence in the *Archives du Ministère des Affaires Etrangères*. Finally it is a pleasure to announce an authoritative edition of *The Letters of Robert Burns* (2 vols.) by J. DeLancey Ferguson.

THE NINETEENTH CENTURY

In the early nineteenth century Wordsworth and Coleridge continue to attract the steady interest by scholars. E. N. Hooker in "Wordsworth's Letter to the Bishop of Llandaff" (*SP*) shows the influence of Tom Paine on Wordsworth's political views. J. D. Rea suggests an interesting connection between "Hartley Coleridge and Wordsworth's Lucy" (*SP*). Earl L. Griggs writes on "Hartley Coleridge's Unpublished Correspondence" (*London Mercury*) and furnishes data on "Coleridge the Dragoon" (*MP*) from unpublished letters of Coleridge. *Coleridge's Shakespearean Criticism* has been edited in two volumes by T. M. Rayson. Miriam M. Thrall rejects "Two Articles Attributed to Carlyle" (*MLN*). E. H. Zeydel has published *Ludwig Tieck and England: A Study in the Literary Relations of Germany and England during the Early Nineteenth Century*. Eleanor W. Thomas offers a study of the life and work of Christina Georgina Rossetti (Columbia). Phillip Enzinger writes on "Thackeray, Critic of Literature" (*Quar. Jour., U. of No. Dakota*) and Q. G. Burris has published a monograph on Richard Doddridge Blackmore: *His Life and Novels* (Illinois). E. P. Lawrence traces "An Apostle's Progress: Matthew Arnold in America" (*PQ*), Harriet Gaylord, in *Pompeii and Her Poet*, offers a popular approach to the Brownings, and Ruth A. Firor shows how extensive are the *Folkways in Thomas Hardy* (Pennsylvania). Another Pennsylvania dissertation, the work of H. T. Boileau, discusses *Italy in the Post-Victorian Novel*. Finally, mention may be made of E. D. McDonald's *The Writings of D. H. Lawrence, 1925-1930*, a supplement to his bibliography of Lawrence published in 1925.

GERMANIC LANGUAGES AND LITERATURE

BY F. W. KAUFMANN

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TRANSLATION

If there is any outstanding feature in this year's research in the literary field it is the decided preference for contemporary literature. As in the preceding year a large number of continental, especially German, authors have been made accessible to a wider public through translation, e.g., Carossa, Edschmid, Leonhard Frank, Emil Ludwig, Thomas Mann, Klaus Mann, Renn, Remarque, G. Reuter, Rilke, Arnold Zweig, Stefan Zweig, Duun, Gunnarson, Hamsun, Lagerlöf, Undset. Prose by Hans Franck, von Keyserling, Thomas Mann, Stefan Zweig has been edited for use in college.

THE OLDER PERIOD

E. Prokosch's systematic presentation of the history of the German language is now ready for press so that we can expect its publication at the beginning of 1932. A. Senn (*JEGP*)* gives evidence of the possibility of direct Gothic-Finnish relations in East-Prussia, thus explaining the so-called Gothicisms in Finnish. A. M. Sturtevant (*GR*, *JEGP*, *L*, *SS*) continues his contributions of notes on Gothic and Old Norse phonology, morphology and syntax. K. Malone (*MLN*) comments on and criticizes several linguistic studies of the last two years. E. C. Metzensteinn (*SP*) contends that the Bonn and Wolfenbüttel sets of fragments of Otfrid's *Evangelienbuch* were not written by the same hand and that they belong to two different groups of manuscripts. A. Steiner (*JEGP*) proves through examples

taken from various independent literatures that the hyperboles of the *Liebesgruss* in *Ruodlieb* cannot conclusively be traced back to a classical source. A. J. Barnouw's investigation on the play of *Mariken van Nieumeghen* (*GR*) shows that the original form was entirely in verse, and that the narrative passages were first spoken by the Expositor Ludi. Barnouw also discovered a Middle Low German version of the Alexander version (Columbia University Press). R. H. Fife (*GR*) infers from glosses, scholiæ and other material that Luther made liberal use of the German vernacular in his early courses and sermons. Paul Merker (*GR*) portrays the literary situation between 1570 and Opitz's *Poeterey* to conclude that Opitz's theory is a rather late formulation of considerably older tendencies.

THE MODERN PERIOD

A. Burkhard (*PQ*) gives a survey on the development of the poetic language in the 18th century originating in opposition to the rationalistic and regular language of the preceding period. W. Kurelmeyer continues his edition of Wieland's *Gesammelte Schriften* (*Preussische Akademie der Wissenschaften*, Berlin, 1931) by editing volume 9. J. A. Walz (*PMLA*) attempts to prove by analyzing a number of passages that the author of the Pseudo-Goethean *Joseph* was not Low German, but a Dutchman who used German with great freedom. Susanne Howe (Columbia University Press, 1930) shows how the German form of *Wilhelm Meister* was modified and adapted by English novelists during the period of industrial and imperial expansion. A. W. Porterfield (*GR*) writes on the relation of Friedrich Schlegel's and Disraeli's *Alarcos* to the Spanish ballad. J. C. Blankenagel (University of North Carolina Press) introduces the dramas of Heinrich von Kleist to the English reading

* Periodicals are abbreviated as follows: *GR*: Germanic Review. *JEGP*: Journal of English and Germanic Philology. *L*: Language. *MFDU*: Monatshefte für deutschen Unterricht. *MLN*: Modern Language Notes. *MP*: Modern Philology. *PMLA*: Publications of the Modern Language Association. *PQ*: Philological Quarterly. *SCS*: Smith College Studies in Modern Languages. *SP*: Studies in Philology. *SS*: Scandinavian Studies.

public in a biographical and critical study. A. P. Coleman (GR) continues his studies on Kotzebue by providing further evidence of the author's Siberian exile and reinstatement. G. O. Arlt (MP) comes to the conclusion that for *Die Ahnfrau* Grillparzer may have utilized both sources *Der Mönch* and *Die blutende Gestalt*, but that the preponderance of evidence is on the side of the former. F. W. Kaufmann (SCS) undertakes to give a re-interpretation of Grabbe's dramatic work and its literary position under the double aspect of the poet's idealistic provenience and his realistic tendency, thereby minimizing the difference between Grabbe and Hebbel. F. L. Shepard (JEGP) shows that in *Maria Magdalena*, Hebbel gave to each of his characters some part of the burden of his sympathies and prejudices, fears and superstitions. A. J. F. Zieglschmid (PQ) gives an account of the *Volkslied*-elements in Julius Mosen's Lyrics. H. Walter (Heine, *A Critical Examination of the Poet and His Works*). Bloch contends that Heine had a strong character and was an optimist beneath his mockery. E. Doernenburg (GR) shows that Raabe cultivated his style from Stern's rather than from Jean Paul's and that this influence is perceptible even in his mature works. A. Burkhard (JEGP) features Detlev von Liliencron's bold unconventionality of language, at times degenerating into brutality. O. S. Fleissner (PMLA) answers the question of whether Clara Viebig is a consequent naturalist in the negative and states that Naturalism is her starting point from where she passes to a deeper understanding of life.

To the late Arthur Schnitzler a number of investigations are devoted: O. P. Schinnerer (GR) publishes the correspondence with the director of the Wiener Burgtheater from whom the author vainly tried to obtain an official prohibition of *Der grüne Kakadu*. Schinnerer (PMLA) also gives a history of the reception of Schnitzler's *Reigen* to the stage and the many attacks upon it, which were mostly animated by political motives

having a religious, nationalistic or anti-Semitic bias. S. Liptzin (JEGP) demonstrates on the basis of *Der einsame Weg* the author's wrestling with his problems, his endeavor to strip them of their conventionality and to extract from them their inner meaning. For *Das weite Land* (PMLA) he shows the gradual shift of the center of dramatic interest from the problem of married life to the theme of the conflict of generations. A. Burkhard (PMLA) develops the idea of the bourgeois-artist contrast as the underlying theme of Thomas Mann's novels. H. J. Weigand (PMLA) analyzes the symbolical and autobiographical value of Thomas Mann's *Königliche Hoheit* and points out how this novel is a variation of the *Tonio Kröger*-theme at a more mature stage. W. Diamond (MFDU) confirms that, in Jacob Wassermann's work, indifference, "lassitude of heart," is regarded as the one unpardonable sin of man against himself and his fellow-men. W. A. Reichart (PQ) gives an introduction to Hermann Stehr and his work. D. Schumann (GR) subjects Franz Werfel's *Lebensgefühl* to a critical study in which he finds as stages of development: a naïve emotional submersion in the world, a more conscious ethical stage, and a religious stage with insight and resignation. W. Dehorst (MFDU) presents Josef Ponten as the poet whose art arises out of his particular geographical environment, the Rhineland, and who combines a physiognomic vision man and natural surroundings, organic and inorganic. H. Jaeger (GR) finds *Erdegebundenheit* to be the chief characteristic in Ina Seidel's poetry as it is that of any genuinely feminine lyrical expression. S. M. Hinz (MFDU) exposes Hans Franck's vitality and terrific truthfulness as reflected in his novels and dramas. F. W. Kaufmann (SCS) presents Erwin Guido Kolbenheyer as a metaphysical poet and finds the historical subject of his novels an adequate form in which to stress the inherent value of life.

P. Hagboldt (MP) describes the struggle of the younger generation in

the dramas between 1910 and 1920 against an environment which it considers as immoral, against parents obstructing the way to happiness, and against fatal inherited desires. Among the studies in the modern period of Scandinavian literatures A. B. Benson publishes a number of letters from the Swedish author Frederika Bremer (SS) to the American writer and landscape architect, Downing. A. T. Gustafson (JEGP) studies English influences in Frederika Bremer's work. A. M. Sturtevant (SS) analyzes the main characters of Kiel-

land's *Skipper Worsø* with special reference to the Haugianere sect and its ideals. W. L. Dahlström (PMLA) comments on the impressionistic character of Hallström's *A Secret Idyll*, its appeal to sense and imagination and its lack of intellectual and spiritual depth. He also examines Strindberg's dramatic expressionism (University of Michigan Press, 1930) and traces many instances of distorted reality back to objective experiences in the author's life.*

*For complete bibliographies see GR and March issue of PMLA.

ROMANCE LANGUAGES AND LITERATURES

By CAMILLO P. MERLINO

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GENERAL

Bibliographies.—Studies on French, Spanish, and Italian topics which appeared in 1930, are listed, respectively, by Lancaster, Crawford, and Shaw (PMLA).* J. D. M. Ford and Ruth Lansing published a most timely and significant bibliography of Cervantes (Harv.). T. J. Wilson compiled a bibliography of La Calprenède (MLN), and W. L. Bullock, one of Italian Renaissance studies in 1930 (SP).

Linguistics.—Among the several articles and notes dealing with one or more aspects of Romance linguistics, the following are worthy of note: *The Disappearing Spanish Verb Form in "—re."* (Hisp.), by L. O. Wright; *The Contrary to Fact Condition in Provençal* (RR), by T. G. Wesenberg; *Old Spanish Terms of Small Value* (MLN), by A. R. Nykl; *Iter and Viaticum in French* (SP), by A. H. Schutz.

* Abbreviations: Harv., *Harvard University Press*; Hisp., *Hispania*; Ital., *Italica*; JHS, *Johns Hopkins Studies in Romance Literatures and Languages*; MLN, *Modern Language Notes*; MP, *Modern Philology*; PQ, *Philological Quarterly*; Princeton, *Princeton University Press*; PMLA, *Publications of the Modern Language Association of America*; RR, *Romanic Review*; SP, *Studies in Philology*; Yale, *Yale University Press*.

FRENCH

Mediaeval.—Two brief articles were devoted to the Arthurian cycle: *Avallo* (MP), by L. Cons and *Avalon* (MP), by C. H. Slover. The most notable contribution to the Alexander cycle was the critical edition of Jehan le Nevelon's *La Venjance Alixandre* (Princeton), by E. B. Ham. Other useful studies on the literature of this period were: *Popular Iconography of the Passion* (PMLA), by Grace Frank; *Three Neglected MSS of the "Voeux du Paon"* (MLN), by E. B. Ham; *The Giant Corsolt* (MP), by F. M. Warren; *Le Dit du Corduanier* (RR), by A. H. Schutz and N. H. Fisher; *Old French Goz and Crestiens Li Gois* (PMLA), by R. Levy; *Le Songe du Castel* (PMLA), by Roberta Cornelius. The two following studies concern more particularly Old Provençal literature: *The Jongleur Troubadours of Provence* (PMLA), by W. P. Jones; *Concerning Two Sirventes of Bertran de Born* (MP), by L. E. Kastner.

Renaissance.—The poetry of the Pléiade was made the object of study by S. F. Will in *The Dedication and Rededication of Ronsard's Hymne de la Mort* (PMLA), and by R. V. Merrill in *Lucian and Du Bellay's*

Poète Courtisan (MP). Notes on Mathurin Regnier's *Macette* were contributed by J. C. Lyons (SP).

Seventeenth Century.—H. C. Lancaster's volume entitled *Du Ryer, Saul* (JHS) was the most notable contribution to the study of the literature of this period. Another noteworthy work was that by Esther Crooks, *The Influence of Cervantes in the 17th Century* (JHS). M. Baudin contributed a brief note, *Une Source du "Légataire Universel"* (MLN).

Eighteenth Century.—On the drama of the period the following articles are worthy of note: *Jacques Autreau, A Forgotten Dramatist* (PMLA), by H. S. Schwartz; *Henry IV on the French Stage in the Eighteenth Century* (PMLA), by C. D. Brenner; *Un Censeur Dramatique sous l'Empire et sous la Restauration* (RR), by C. Sprietsma; *Un Tournant de la carrière du valet de comédie* (MLN), by M. Baudin. Unpublished letters of Pierre Bayle were edited by G. L. Gerig and G. L. Van Roosbroeck (RR). Both Bayle and Voltaire were studied by H. E. Haxo in *Pierre Bayle avant le Lettres Philosophiques* (PMLA). E. E. Rovillain threw further light on the sources of Voltaire's *Zadig* (PMLA), while Edith Philips contributed a brief article to some changes contemplated by Voltaire in his *Questions sur les Miracles* (MP). Of peculiar interest to American scholars was G. Chinard's *Notes de John Adams sur Voltaire et Rousseau* (MLN). A further study on Rousseau was that by A. J. Dickman, *Le Temps est un Songe et la Nouvelle Héloïse* (PQ). D. C. Cabene contributed an interesting comparative study on Saint-Simon and Proust (PMLA).

Nineteenth Century.—With *Agatha et le voeu fatal d'Atala* (MLN), G. Chinard added to his several studies on Chateaubriand. He also contributed *Vigny et l'amiral Collingwood* (MLN). New aspects on the life of Stendhal were furnished by R. Vigneron in *Stendhal au Conclave* (MP), while W. M. Dey published a brief comparative note on

Stendhal and Victor Hugo (SP). G. Whiting studied Zola's indebtedness to Jonson in *Volpone, Herr Vor Fuchs, and Les Héritiers Rabourdin* (PMLA). Edith Melcher contributed a brief study on Balzac and Henri Monnier (RR).

Contemporary Literature.—S. Rhodes studied at length Henri Bremond's literary crusade; Racine and Valéry (RR), while T. Bussom contributed a lengthy study on Proust interpreted through his letters (PMLA). S. Rhodes made a brief comparative study also of Marcel Schwob and André Gide (RR).

ITALIAN

Dante.—R. Altrocchi studied definitively Michelino's famous painting of Dante (*Speculum*). J. G. Fucilla's brief note on the first fragment of a translation of the *Divine Comedy* printed in America (*Ital.*) is of interest for the fortune of Dante in North America. J. B. Fletcher contributed an interpretive study, *Dante's School of the Eagle* (RR). He also published what promises to be accepted as one of the best terza rima translations of the *Divine Comedy* (Macmillan).

Mediaeval.—The most notable contribution to the studies on this period was K. McKenzie's critical edition of Antonio Pucci's *Le Noie* (Princeton). Several references to Boccaccio are to be found in R. W. Babcock's *The Medieval Setting of Chaucer's Monk's Tale* (PMLA), S. B. Meech's *Chaucer and the Ovide Moralisé* (PMLA), and W. F. Thrall's *Cymbeline, Boccaccio, and the Wager Story in England* (SP).

Renaissance.—W. L. Bullock studied a Cinquecento meaning of the word *romanzo* (PMLA). E. R. Turner wrote on Boiardo (*The Johns Hopkins Alumni Magazine*). O. J. Campbell studied Aretino's *Il Marescalco* in relation to Jonson's *Epicoene* (PMLA), C. P. Merlino published a little code of manners drawn from Mario Equicola (PQ). Brief notes on Maistre André, Italien (MLN) and on reminiscences of the *Orlando Furioso* in *Comus*, were con-

LATIN LITERATURE

tributed by Winifred Smith and E. G. Ainsworth, respectively.

Modern.—Of special note was T. G. Bergin's useful volume on Giovanni Verga (Yale). J. O'Brien wrote on Italo Svevo (*The Bookman*), and J. Giuntioni summarized very briefly Carducci's reaction to Romanticism (*Ital.*).

SPANISH

Mediaeval.—The recovery of the metre of the *Cid* was made the object of further study by W. E. Ellery (*PMLA*). A. F. Whitten contributed some data on Juan Ruiz, Archpriest of Hita (*RR*), and Barbara Matulka wrote on an anti-feminist treatise of fifteenth century Spain: Lucena's *Repetición d'Amores* (*RR*).

Golden Age.—One of the most noteworthy contributions to this period was the publication and critical study of the anonymous *Tragedia de los Amores de Eneas y de la Reyna Dido* (*PMLA*) by J. E. Gillett and E. B. Williams. H. M. Martin studied the Perseus myth in Lope de Vega and Calderón with some references to their sources (*PMLA*). The sources of Calderón's *A Secreto Agravio Secreto Venganza* were investigated by S. Eoff (*MP*), while R. E. House made a brief study of some

verse of Jayme de Güete (*PQ*). Traces of the wandering Jew in Spain were collected by J. E. Gillett (*RR*), and S. E. Leavitt contributed notes on the Gracioso as a dramatic critic (*SP*).

Modern.—The following studies, all of them brief, were of interest: N. B. Adams, *Hartzenbusch's "Sancho Ortiz de La Rollas"* (*SP*); J. P. W. Crawford, *Gutierre de Cetina, Notes on the Date of His Birth and the Identity of Dorinda* (*SP*); S. A. Stoudemire, *A Spanish Play on the Fair Rosamond Legend* (*SP*).

Miscellaneous.—Students of comparative literature will welcome Barbara Matulka's volume, *The Novels of Juan de Flores and Their European Diffusion* (*Institute of French Studies*). A. L. Owen speculated on some of the psychological aspects of Spanish Realism (*Hisp.*), while H. Corbató studied some outstanding and recurring themes in Valencian (*Hisp.*). C. C. Glascock wrote on Feijóo's views on liberty in literary art (*Hisp.*), and J. R. Spell investigated the genesis of the first Mexican novel (*Hisp.*). *The Importation of French Literature in New York City 1750-1800* (*SP*), by H. M. Jones will be welcomed by students of the fortune of French literature in America.

LATIN LITERATURE

BY JOHN C. ROLFE

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VERGIL

The Bimillennium.—The difference of opinion as to the proper date for the two thousandth anniversary of the birth of Vergil (see *THE AMERICAN YEAR BOOK*, 1930, p. 789) led to a prolongation of its activities into 1931. A second cruise to places connected with the poet and his works was successfully carried out by the Bureau of University Travel, and exercises in commemoration of Vergil were held in many schools and colleges. The result has been a wider acquaintance with the Mantuan by

the general public, the reading of more of his works than the traditional six books of the *Aeneid*, and greater interest in travel in classic lands. The importance of the study of ancient sites is stressed by R. S. Conway (*C. J.** xxvi, 620 ff.).

*Periodicals are abbreviated as follows: *A.J.P.*, *American Journal of Philology*; *C.J.*, *Classical Journal*; *C.P.*, *Classical Philology*; *C.W.*, *Classical Weekly*; *P.Q.*, *Philological Quarterly*; *T.A.P.A.*, *Transactions of the American Philological Association*; *U.C.P.*, *University of California Publications in Classical Philology*. Titles of books are italicized, those of periodical articles are put in quotation marks.

Books and Papers.—E. K. Rand gives us an account of *The Magical Art of Vergil* (Harv. Univ. Press, 1931) and H. F. Rebert of *Vergil and Those Others* (Amherst, Mass., 1930), while R. C. Conway in *Makers of Europe* (Harv. Press, 1931) devotes Chap. IV to "Poetry and Government. A Story of the Power of Vergil." Of the numerous papers in periodicals the following may be mentioned: "Remarks on the Character of Aeneas," C. Knapp (*C. J.* xxvi, 99 ff.); "The Function of the Gods in the *Aeneid*," Dorothea Woodworth (*id.*, 112 ff.); "The Golden Bough for the Student of Vergil," Mary Stark (*id.*, 259 ff.); "Ecce Vergilius!" Helen Chesnutt (*id.*, 273 ff.); "Vergil's Appeal to the Japanese," E. W. Clement (*id.*, 421 ff.); "Vergil's Philosophic Background and his Relation to Christianity," C. N. Smiley (*id.*, 660 ff.); "Vergil and the Roman Forum," H. F. Rebert (*C. W.* xxiv, 65 ff. and 87 ff.); "Self-Revelation in Vergil: The Heart of a Poet," W. C. Greene, (*id.*, 169 ff. and 187 ff.); "Reflections on Rereading the *Aeneid*," Emily Dutton (*id.*, 185 ff. and 193 ff.); "Pietas versus Violentia in the *Aeneid*," Adelaide Hahn (*C. W.* xxv, 9 ff. and 17 ff.). The vexed question of the half-lines of the *Aeneid* is examined from a new point of view by L. K. Born (*C. P.* xxvi, 191 ff.) with the conclusion that the half-line are all genuine, that Vergil intended to finish them, and that they represent incomplete work. R. B. Steele discusses "The Authorship of the *Moretum*," and believes that the balance inclines toward Vergil as its writer. (*T. A. P. A.* lxi, 195 ff.). J. W. Spaeth, Jr., writes of "Martial and Vergil" (*id.*, 19 ff.), Dorothea Woodworth interprets Lavinia (*id.*, 175 ff.), and W. F. J. Knight finds the wooden horse a magical, rather than a tactical, device (*C. P.* xxv, 358 ff.). The addresses of C. C. Mierow, "Vergil after Twenty Centuries" (*Colorado Coll. Publ.*), with the list of the eleven audiences before which they were delivered, show the extent and the variety of the interest in the great Roman poet.

OTHER LATIN WRITERS

Writers other than Vergil have not been neglected. W. B. McDaniel, 2d., gives us an edition of *The Poems of Catullus* (Oxford Univ. Press, 1931), in which the poems are arranged "on the basis of their temporal and artistic significance." F. M. Debatin writes of "Catullus, a Pivotal Personality" (*C. J.* xxvi, 207 ff.), R. Pemberton treats "Literary Criticisms in Ovid" (*id.*, pp. 528 ff.), Elizabeth Tappan, "Julius Caesar's Luck" (*id.*, 141 ff.), J. W. Spaeth, Jr., "Caesar's Poetic Instincts" (*id.*, 198 ff.). E. L. Crum finds "Human Elements in Vitruvius. De Architectura" (*C. W.* xxiv, 97 ff.). G. L. Hendrickson questions a belief of long standing in "The First Publication of Horace's Odes" (*C. P.* xxvii, 1 ff.), J. Elmore writes of "Horace and Octavian" (*C. P.* xxvi, 258 ff.), connecting the second Ode of Book II with Octavian's return from the East and his celebration of a triple ovation in 29 B. C., and H. V. Cantor, of "Venusia and the Native Country of Horace" (*C. J.* xxvi, 439 ff.). J. W. Spaeth, Jr., discusses "Cicero the Poet" (*C. J.* xxvi, 505 ff.) and M. Emeneau, "Ambrose and Cicero" (*C. W.* xxiv, 49 ff.). "The Dramatic Technique and the Originality of Terence" are discussed by Helen Clifford (*C. J.* xxvi, 605 ff.), "Terence and Menander" by R. C. Flickinger, (*id.*, 676 ff.), "Lucan and his Roman Critics" by Eva Sanford (*C. P.* xxvi, 233 ff.), "The Date of Manilius" by R. B. Steele (*A. J. P.* lii, 157 ff.); and H. C. Nutting offers "Notes on Lucan" (*A. J. P.* lii, 40 ff.).

PALAEOGRAPHY AND TEXT CRITICISM

A. C. Johnson and H. B. Van Hoesen publish *Papyri in the Princeton University Collection* (Johns Hopkins Press, 1931). H. M. Martin writes of "the Substitution of Simple for Compound Verbs in the Merovingian Diplomata" (*C. P.* xxv, 367 ff.), Dorothy Robothan on "Two Unreported Perius Manuscripts" (*C. P.* xxvi, 284 ff.), B. L. Ullman on "Valerius Flaccus in the Medieval Florilegia" (*id.*, 21 ff.), L. W. Jones on "Ancient Texts of Terence" (*id.*, 318

ff.), and T. Frank on "Quarnatal" (*A. J. P.* lii, 278 ff.), which he finds confused with *quartarius* in Pliny (*N. H.* xiv, 35) and perhaps elsewhere.

ROMAN RELIGION

E. E. Burris discusses "The Use and Worship of Fire among the Romans" (*C. W.* xxiv, 43 ff.), W. M. Green "The Rustic Festival of Osiris" (*id.*, 83 ff.) and "The Lupercalia in the Fifth Century" (*C. P.* xxvi, 60 ff.), K. Scott "The Dioscuri and the Imperial Cult" (*C. P.* xxv, 379 ff.), G. D. Hadzsits "The Dates of the Megalesia" (*T. A. P. A.* lxi, 165 ff.), Inez Ryberg "Was the Capitoline Triad Etruscan or Latin?" (*A. J. P.* lii, 145 ff.), and K. Scott, "Emperor Worship in Ovid" (*T. A. P. A.* lxi, 43 ff.).

THE TEACHING OF LATIN

The dropping of Latin by many colleges as a requirement for the degree of A.B. has already diminished the number of the students of that subject, and has made the teaching and the future of Latin a real issue. A clear and temperate presentation of the subject is offered by W. H. Alexander in "Peisistratus, the Tyrant or the Future of Latin," an address delivered at the summer session of the University of California. Interesting in this connection is the following sentence from "The Effect of Foreign Language Study on Habits of Thought," by C. W. Bradley (*C. W.* xxv, 1 ff.); "*Realien*, history, art, political and ethical ideas, and English etymology—should be frankly recognized as forming a study distinct from the language; all of them, even extensive reading of a particular author, can be attained more directly and far more economically in books and translations in the English language." In a note (p. 5) C. Knapp says: "If the arguments advanced in this paper are accepted, one is driven to the conclusion that the Report of the Classical Investigation of the American Classical League may prove to be the most deadly blow that has yet been struck at the cause of classical education." Articles on the subject of Latin teaching are fairly numerous, ranging in advancement

from "The Contract Method in Junior High School Latin" by Calla Geryles (*C. J.* xxvi, 364 ff.) to "Character of the Training and of the Thesis for the Degree of Doctor of Philosophy in the Classics" by W. A. Oldfather (*id.*, 580 ff.).

GRAMMAR AND METRIC

Alice Carpenter studies "Hypermeter Lines and Interlinear Hiatus in Latin Hexameter Verse" (*P. Q.* ix, 351 ff.), J. Schlicher "The Historical Tenses and their Functions in Latin" (*C. P.* xxvi, 46 ff.), H. C. Nutting "Notes on *confido*, *fido*, and *diffido*" (*U. C. P.*, 10, 9, 219 ff.), and "The Ablative Absolute and the Stenographic Ablative" (*id.*, 203 ff.), E. B. Lease "The Ablative Absolute limited by Conjunctions" (*A. J. P.* lii, 175 f.).

MEDIAEVAL AND LATE LATIN

Eva Sanford collects "Scaligeriana" (*C. J.* xxvi, 279 ff.). C. C. Mierow treats of "Some Later Latin Writers of Spain" (*C. W.* xxiv, 157 ff.) and (*C. P.* xxv, 343 ff.), "Mediaeval Latin Vocabulary, Usage, and Style, as Illustrated by the Philobiblion (1345) of Richard de Bury," incidentally making a plea for greater interest in the later Latin. H. V. Canter writes of "The Venerable Bede and the Colosseum" (*T. A. P. A.* lxi, 150 ff.) Emma Denkinger gathers "Some Renaissance References to *Sic vos non vobis*" (*P. Q.* x, 151 ff.). A. L. Wolfe writes of "Vergil as Dante Knew him" (*C. J.* xxvi, 538 ff.). Recent books under this head are G. P. Baker's *Constantine the Great and the Christian Revolution* (New York, 1931) and E. S. Duckett's *Latin Writers of the Fifth Century* (Holt, New York, 1930).

HISTORY AND GEOGRAPHY

E. T. Sage considers "The Treatment of Catiline in the Latin Literature of the Early Empire" (*C. W.* xxiv, 137 ff.), finding few allusions to the conspirator in sober history; the references to him are uniformly hostile and for the most part due to instruction in the schools of rhetoric; but in the *Aeneid* (v, 121) his ancestor Sergestus occupies a place of

apparent distinction. R. S. Rogers writes of "Lucius Arruntius" (*C. P.* xxvi, 31 ff.), of "Quinti Verani, pater et filius" (*id.*, 171 ff.), and of "The Date of the Banishment of the Astrologers" (*id.*, 203 ff.). J. E. Dunlap discusses "Tribal Boundaries in Ancient Gaul" (*C. P.* xxvi, 318 ff.) and "The Place of the Final Defeat of the Helvetians" (*id.*, 121 ff.); M. Hadas tells of the "Gadarenes in Pagan Literature" (*C. W.* xxv, 25 ff.).

MISCELLANEOUS

W. B. Sedgwick writes ironically of "The Awful Influence of Declamation on Silver Latin Poetry" (*C. W.* xxiv, 94 ff.) and of "Ancient Jeux D'Esprit and Poetical Eccentricities" (*id.*, 153 ff.); R. B. Steele, of "The Interrelation of Latin Poets under Domitian" (*C. P.* xxv, 328 ff.); J. W. Spaeth, Jr., of "Cannae and Tannenberg" (*C. W.* xxv, 32 ff.); E. S. Gerhard, of "Schiller and Vergil" (*C. W.* xxiv, 33 ff.); Daphne Schauhl, of "Cicero and Modern Problems" (*C. J.* xxvi, 266 ff.). T. Frank questions the current view of "The Status of Actors at

Rome" in *C. P.* xxvi, 11 ff. Orth Wilner writes of "Roman Beauty Culture" (*C. J.* xxvii, 26 ff.) and of "The Character Treatment of Inorganic Rôles in Roman Comedy" (*C. P.* xxvi, 264 ff.); Harold Bennett discusses the meaning of the term "Sacer Esto" (*T. A. P. A.* lxi, 1 ff.), arriving at the conclusion that the *sacer homo* was never an outlaw, but a citizen condemned to death and regularly executed. E. S. McCartney writes of "The Removal of Bonds from Prisoners and Slaves in Times of Stress" (*C. P.* xxvi, 166 ff.); J. W. Spaeth, Jr., continues the lists of "Classical Articles in Non-classical Periodicals" (*C. W.* xxiv, 47, 87 ff., 118 ff., 166 ff.; xxv, 7, 15, 23 ff.). Of recent doctoral dissertations may be mentioned Cora Pickett's "Temple of Quirinus," F. B. Krauss's "Interpretation of the Omens, Portents and Prodigies recorded by Livy, Tacitus and Suetonius," H. B. Ash's "Columellae Rei Rusticae Liber X De Cultu Hortorum, Text, Critical Apparatus, Translation, and Commentary" (Phila., 1931).

GREEK LITERATURE

By ROBERT CHISOLM HORN

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ART AND ARCHAEOLOGY

Many important books on Greek art and archaeology have appeared in the last year; some of the most noteworthy are the publications of the results of excavation at Corinth conducted by the American School of Classical Studies at Athens. These works, published by the Harvard University Press, are: *Corinth*, Vol. III, Part I, *Acrocorinth*, by C. W. Blegen, Oscar Broneer, Richard Stillwell, and A. R. Bellinger; Vol. IV, Part II, *Terracotta Lamps*, by Oscar Broneer; and Vol. V, *The Roman Villa*, by T. Leslie Shear. *The Excavations at Olynthus*, Vols. II (1930), III and IV (1931), by David M. Robinson, are another important series of publications (Johns Hopkins Press). These

volumes are Nos. 9, 11, and 12 of the Johns Hopkins University Studies in Archaeology. *Excavations at Dura Europos*, Vol. II, by P. V. C. Baur and M. I. Rostovtzeff, appeared in 1931 (Yale Univ. Press). *A Catalogue of the Greek Vases in the Royal Ontario Museum of Archaeology, Toronto*, in two volumes, by David M. Robinson, Cornelia G. Harcum, and J. H. Iliffe, is a splendid publication of one of the finest collections of Greek pottery in America. *Syracusan Dekadrachms of the Euainetos Type*, by Albert Gallatin, will be welcomed by the student of Greek art as well as the numismatist (Harvard Univ. Press, 1930). *Animals in Greek Sculpture*, by Gisela M. A. Richter, is o

value for a study of animals as well as for a special department of sculpture (Oxford Univ. Press, 1930). Among books of a more popular type is *Art in the Life of Mankind*, Vol. III, *Greek Art and Its Influence*, by A. W. Seaby, recently published by the Oxford University Press. Very readable and enlightening is C. Leonard Woolley's *Digging Up the Past* (Scribner, 1930). The sixth edition of the *Handbook of the Classical Collection*, by G. M. A. Richter, was published in 1930 (Metropolitan Museum of Art, New York). *Through Basque to Minoan*, by F. G. Gordon, contains transliterations and translations of the Minoan Tablets (Oxford Univ. Press, 1931).

TRANSLATIONS AND EDITIONS

Among the most important works is *Homeri Ilias*, in three volumes, by T. W. Allen (Oxford Univ. Press, 1931). Volume I contains Prolegomena; Volumes II and III, Text and Apparatus Criticus. *The Works of Aristotle*, Vol. III, translated under the editorship of W. D. Ross, was published this year (Oxford Univ. Press). An English publication of value for us is *The Works of Pindar*, translated with Literary and Critical Commentaries, by L. R. Farnell (London, Macmillan and Co., 1931). Among recent publications of the Oxford University Press are the *Oxford Book of Greek Verse*, by Gilbert Murray and Others; and *The Poems of Leonidas of Tarentum*, Greek Text with Translation into English Verse, by Edwyn Bevan. The interest in Aristophanes is shown by *Aristophanes, Eleven Comedies* (Horace Liveright, 1930) and *Aristophanes' Lysistrata*, a New Version, by Gilbert Seldes (Farrar and Rinehart, New York, 1930). *The Classics in Translation*, by F. S. Smith, is an annotated guide to the best translations of the Greek and Latin classics into English (Scribner, 1930). *The Antigone of Sophocles*, translation by John Jay Chapman (Houghton Mifflin Co.; 1930).

GREEK LANGUAGE AND LITERATURE

Grammars and Dictionaries.—

The fifth part of the new edition of *Liddell and Scott's Greek Lexicon* is now published (Oxford Univ. Press, 1931). *The Vocabulary of the Greek New Testament*, by J. H. Moulton and G. Milligan, which was originally published in parts, is now published in one-volume edition (Richard R. Smith, New York, 1930). One of the most important publications of the year is *The Greek Element in English Words*, by John C. Smock, edited by Percy W. Long (Macmillan, 1931). This is the work of a scientist who was interested in Greek; he died before the publication of his work. There were collaborators in special fields. The dictionary contains an alphabetical list of English words with the Greek words or elements from which they have been derived, and following that an alphabetical list of Greek words and forms with the English words which have come from them. The great number of English words from Greek shows the great importance of the Greek element in English and the value of a knowledge of Greek. *The First Year of Greek*, by James T. Allen, appears in a revised edition (Macmillan, 1931). *A New Short Grammar of the Greek Testament*, by A. T. Robertson and W. H. Davis, is practically the ninth edition of the admirable and well-known *Short Grammar of the Greek New Testament* of Professor Robertson (Richard R. Smith, New York, 1931).

Literature.—*Tradition and Design in the Iliad*, by C. M. Bowra, is an interesting and important contribution to the appreciation and understanding of Homer (Oxford, Clarendon Press, 1930). Another interesting and suggestive book, dealing with the ever-fascinating Homeric question, is Victor Bérard's *Did Homer Live?* translated by Brian Rhys (E. P. Dutton and Co., 1931). *A Hand-List of Books Relating to the Classics and Classical Antiquity*, by J. A. Nairn, enlarged by B. H. Blackwell, will be of service to many (Oxford, B. H. Blackwell, 1931).

Papyri.—There are several important publications within the past year. *Greek Ostraca in the Bodleian Library at Oxford and Various Other Collections*, Vol. I, by J. G. Tait, is a contribution in the general realm of papyrology (London, Egypt Exploration Society Publication, 1930). *Two Theocritus Papyri*, by A. S. Hunt and J. Johnson, is a contribution to the study of Theocritus (Egypt Expl. Soc., 1930). *Zenon Papyri in the University of Michigan Collection*, by C. C. Edgar, contains 120 of these documents connected with Zenon, carefully edited, explained, and translated (Univ. of Mich. Press, 1931). *Papyri in the Princeton University Collections*, by A. C. Johnson and H. B. Van Hoesen, is published as No. 10 of the Johns Hopkins University *Studies in Archaeology* (Johns Hopkins Press, 1931). "Two Fragmentary Birth Certificates from the Michigan Collection" and "Some Papyrus Fragments from the Michigan Collection," by Henry A. Sanders, appeared in 1931 as an Extract from the *Memoirs of the American Academy in Rome*, Vol. IX. *The Journal of Egyptian Archaeology*, Vol. XVI, Parts I and II (1930), contains an article entitled "The Numerical Value of a Magical Formula," by Campbell Bonner.

GREEK HISTORY

Minoans, Philistines, and Greeks, by A. R. Burn, is an interesting volume in the History of Civilization Series (Alfred A. Knopf, 1930). *Ancient Corinth*, Vol. I, by J. G. O'Neill is No. 8 in the Johns Hopkins University Studies in Archaeology (Johns Hopkins Press, 1930). Volumes VIII and IX of the *Cambridge Ancient History* were published by Macmillan in 1930 and 1931; these volumes deal with Rome; Volume III of Plates appeared in 1930. The second edition of Rostovtzeff's *History of the Ancient World*, Vol. I, was published in 1930 (Oxford, Clarendon Press). Other noteworthy books are: *Josephus and the Jews*, by F. J. Foakes-Jackson (Richard R. Smith, 1930); *Hellenistic Military and Naval Developments*, by W. W. Tarn (Cambridge Univ. Press, 1930); and *Greek*

Cities in Italy and Sicily, by David Randall-MacIver (Oxford, Clarendon Press, 1931).

GREEK LIFE AND CIVILIZATION

Athletics of the Ancient World, by Norman Gardiner, is a most welcome treatment of an interesting subject (Oxford Univ. Press, 1930). *The Technical Arts and Sciences of the Ancients*, by A. Neuburger, Translated by H. L. Brose, was published by Macmillan in 1930. A most scholarly contribution to our knowledge of ancient mathematics is *A Manual of Greek Mathematics*, by Sir Thomas L. Heath (Oxford Univ. Press, 1931). *Greek Culture and Thought*, by W. L. Westermann, is reprinted from *The Encyclopedia of the Social Sciences*, Vol. I (Columbia Univ. Press, 1930). New editions of well known books are: *Greek Life and Thought*, by La Rue Van Hook (Columbia Univ. Press, 1930); *Greek Lands and Letters*, by F. G. and A. C. E. Allinson, third edition (Houghton Mifflin Co., 1931); and *Whibley's Companion to Greek Studies*, fourth edition (Macmillan, 1931). A book of more popular tone is *Everyday Life in Homeric Greece*, by Mrs. Marjorie and C. H. B. Quennell, published in *Everyday Life Series* (Putnam's, 1930). *After Two Thousand Years*, a Dialogue between Plato and a Modern Young Man, by G. L. Dickinson, will be of interest to many (W. W. Norton and Co., New York, 1930).

GREEK PHILOSOPHY AND RELIGION

Gilbert Murray's well known *Five Stages of Greek Religion* has gone through its third printing, revised (Columbia Univ. Press, 1930). *The Philosophy of Plato*, by Irwin Edman, is a recent publication of the Modern Library (New York, 1930). *God in Greek Philosophy*, by R. K. Hack, is a scholarly piece of work (Univ. of Cincinnati Press, 1931). One of the two volumes published in 1931 in the series entitled *Our Debt to Greece and Rome* belongs here: *Immortality*, ancient beliefs in the immortality of the soul, by Clifford H. Moore. The other volume pub-

SEMITIC LANGUAGES AND LITERATURE

lished this year is *Survivals of Roman Religion*, by Gordon J. Laing (Longmans, Green).

LOEB CLASSICAL LIBRARY

These volumes in this series were published in 1930: *Athenaeus*, Vol. IV, by C. B. Gulick; *Strabo*, Vol. VII, by H. L. Jones; *Plato, Republic*, Vol. I, by Paul Shorey; *Josephus, Jewish Antiquities*, Vol. IV, by H. St. J. Thackeray; *St. Basil*, Vol. III, by Roy J. Deferrari; *Philo*, Vol. III, by F. H. Colson and G. H. Whitaker; *Lysias*, by W. R. M. Lamb; and *Demosthenes, Olynthiacs, Philippics, Minor Public Speeches, Speech against Leptines*, by J. H. Vince. In 1931 these appeared: *Hippocrates*, Vol. IV, and *Heraclitus, On the Universe*, by W. H. S. Jones; and *Plutarch, Moralia*, Vol. III, by F. C. Babbitt (G. P. Putnam's Sons).

GENERAL

Biography.—*From Maumee to Thames and Tiber*, the life-story of an American classical scholar, by Ernest G. Sihler, is the interesting autobiography of a distinguished scholar and teacher, who devoted a long and useful life to the cause of classical scholarship (New York Univ. Press, 1930). A book of similar type, of great interest to scholars because of the personality and scholarly ability

of the author, is: *My Recollections*, by Ulrich von Wilamowitz-Moellendorf, Translated by G. C. Richards (London, Chatto and Windus, 1930). *Schliemann, the Story of a Gold-seeker*, by Emil Ludwig, translated by D. F. Tait, although one-sided as is shown by the title, is nevertheless full of interest and attractively written (Little, Brown, and Co., 1931).

Scholars.—*Classical Studies in Honor of John C. Rolfe*, ed. by G. D. Hadzsits, contains many scholarly papers and worthily honors an eminent classical scholar (Univ. of Pennsylvania Press, 1931). *Mélanges Paul Thomas*, ed. Paul Faider (Bruges, 1930), among its many excellent papers contains an article by Professor Paul Shorey in French on "Plato and Aristotle." Another article in the collection is by Professor Knapp on "Terence," written in English. The second volume of *Yale Classical Studies* was published this year (Yale Univ. Press).

Classical Journal Index.—An excellent piece of work, and destined to be of the greatest service is the *Index to the Classical Journal*, by F. H. Potter (The Torch Press, 1931). The Index to the first thirteen volumes is thin in comparison with this General Index to Volumes I-XXV, which makes easily available the many treasures of this valuable periodical.

SEMITIC LANGUAGES AND LITERATURE

BY GEORGE A. BARTON

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GENERAL PUBLICATIONS

Ezekiel.—During 1931 the publications in this field have not been as numerous as in some previous years, nevertheless they have been noteworthy. In this sketch one or two works must be mentioned which appeared so late in the year 1930 that no mention of them was made in the report of last year. First among these is Charles Cutler Torrey's *Pseudo-Ezekiel and the Original Prophecy* (Yale University Press, New

Haven). Torrey reaches the conclusion that the book of *Ezekiel* is a pseudepigraph composed after the time of Alexander the Great. The author is one of our ablest and most brilliant scholars, and masses an imposing array of arguments. At times he is too ingenious to be convincing. The problem is by no means settled. A British scholar has during the present year devoted a small volume to the defense of the thesis that the *Ezekiel* was written in the seventh

Century B. C. and that he was a prophet of Northern Israel! Evidently the one Old Testament book, about the origin of which we thought we had fairly certain knowledge, is to be in the immediate future a storm-centre of critical theorizing.

Hebrew Religion.—Another book which should be mentioned here is *Hebrew Religion* by W. O. E. Oesterley and Theodore H. Robinson. Its authors are British scholars, but an American edition of the book has been issued by the Macmillan Company. The volume is noteworthy for devoting much more space than most books on the subject to survivals of animism, sacred waters, totemism, etc.

Babylonian Terra-Cottas.—A word should also be said of Dr. Leon Legrain's *Terra-Cottas from Nippur*, published by the University Museum (Philadelphia). The nearly 450 objects reproduced in the volume throw a vivid light upon the dress, worship, and life of the ancient Babylonians, descending even to children's rattles. Such objects illuminate many passages in the literature, and are, for that reason, quite as important for the interpreter as is philological research.

Excavations in Palestine.—During the present year Professor J. Garrow Duncan has issued (Macmillan) a work entitled *Digging up Biblical History*, which gives in popular form an account of the results of the various excavations in Palestine down to the present time.

PALESTINE

Topography and History.—Two of the fundamental publications on which such writers as Duncan base their work have been made by the University Museum in Philadelphia. They are *The Topography and History of Bethshan* by Alan Rowe and *The Four Canaanite Temples of Bethshan* by G. M. Fitzgerald. These works make accessible the results of work which the Museum has prosecuted at this important center of ancient Palestine since 1921. The stratification of the mound for the

period of the Egyptian occupation of the city 1470-1225 B. C. is so remarkably well defined that, through our knowledge of Egyptian chronology, objects can be dated with great accuracy. It is thus possible to determine when certain foreign influences entered the country. The two volumes present the results in a clear and reliable account, well illustrated, and will take their place as scientific books of reference.

Language.—Of quite a different character is *Hebrew Reborn* by Spiegel Shalom (Macmillan). It is the story of the revival of the use of Hebrew as a living language by the Jewish communities in Palestine as a consequence of the Zionist colonization of that land. In tracing the history of the movement it presents a vivid picture of the currents of thought in present-day Judaism.

Mythology.—Another addition to the literature of our subject is made by the appearance of Vol. V of *The Mythology of all Races* (Boston, 1931). This volume is devoted to *Semitic Mythology*, and is written by Stephen Langdon, an American scholar resident in England. The title is something of a misnomer as the author has treated only Babylonian and Assyrian myths, a part of which are Sumerian and not Semitic, and has by no means included all of these. One looks in vain for the myth of the marriage of Enlil and Ninlil, the myth of Zu and the south wind, and others.

HEBREW LAW

The University of Chicago Press promises before the end of the present year a volume entitled *The Origin and History of Hebrew Law*. It is to treat of the various codes contained in the Pentateuch (the Decalogue, the Book of the Covenant, the Deuteronomistic Law, and the Priestly Code) and to contain appendices treating of the Code of Hammurabi, the Assyrian Laws, and the Hittite Code. The author is to be Professor J. M. P. Smith, whose name is a guarantee of a work of fine quality.

JOSEPHUS

Dropsie College, Philadelphia, has published a small volume by Professor Solomon Zeitlin entitled *Josephus on Jesus with Particular Reference to the Slavonic Josephus and Josipon*. Dr. Zeitlin argues against the genuineness of the passage in Josephus which refers to the Founder of Christianity. Several Christian scholars have taken similar ground before him. In the judgment of the present writer the theory of the subject by the great Jewish scholar, Professor Joseph Klausner, is much nearer the truth. Klausner believes the most of the passage in Josephus genuine, but that it has been glossed here and there by the hand of a Christian.

CUNEIFORM TEXTS

As we write there has just come from the press the third volume of the *Publications of the American*

School of Oriental Research in Baghdad, which, though published by M. Paul Geuthner in Paris, is by an American scholar, Professor Edward Chiera of the University of Chicago. It is also the product of an American enterprise. The volume is the third which Professor Chiera has published from the tablets which he found at Nuzi, near Kirkuk, in Iraq in 1925. It contains 98 texts in cuneiform Assyrian which deal with two phases of business, exchanges and security. These, together with those previously published, reveal the processes of the social and business life of the ancient neighbors of the Assyrians about 1500 B. C. Professor Chiera is, perhaps, the best living copyist of cuneiform texts, but in this volume he has outdone himself. The signs are reproduced with a clearness and precision which leaves nothing to be desired.

INDO-EUROPEAN LINGUISTICS

By J. ALEXANDER KERNS

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General Indo-European.—*F. R. Blake, "A Semantic Analysis of Case" (*Language Monograph* vii *Curme Volume of Linguistic Studies*, 34-49). Klara H. Collitz, "Verbs of Motion in their Semantic Divergence" (*Language Monograph* viii, pp. 112). E. Gottlieb, "A Systematic Tabulation of Indo-European Animal Names" (*Language Dissertation* viii, pp. 48). G. S. Lane, "Words for Clothing in the Principal Indo-European Languages" (*Language Dissertation* ix, pp. 44). *E. H. Sturtevant, "Relatives in Indo-European and Hittite" (*Language Monograph* vii, 141-149). *Id.*, "Changes of Quantity Caused by Indo-Hittite *h*" (*Language* vii, 115-124). F. A. Wood, "Prothetic Vowels in Sanskrit, Greek, Latin, and Germanic" (*Am. Jour. Philol.* lii, 105-144). *Id.*, "Indo-European Bases Derivable from Sanskrit *áva* 'down'"

(*Studies in Philology* xxviii, no. 4 *Royster Memorial Studies*, 1-13). *A. J. F. Zieglschmid, "Der Untergang des einfachen Praeteritums in verschiedenen indogermanischen Sprachen" (*Language Monograph* vii, 169-178).

Hittite.—E. H. Sturtevant, "A Hittite Glossary," (*Language Monograph* ix). *Id.*, "Hittite Etymologies," (*Language* vii, 1-13). *Id.*, "Hittite Verbs with Suffix *na*, *sa*, or *a*," (*ibid.* 167-172). Cf. also the two articles of the same scholar cited under the previous section.

Indo-Iranic.—M. Bloomfield (deceased), and F. Edgerton, "Vedic Variant Variants." Vol. I, *The Verb*. Of outstanding importance. —H. Collitz, "The Avestan Prefix *as*" (*Jour. Am. Or. Soc.* li, 160-163). M. B. Emeneau, "Confusion in Prakrit between the Sanskrit Prepositions *prati* and *pari*" (*ibid.*, 33-39). R. G.

Kent, "The Recently Published Old Persian Inscriptions" (*ibid.*, 189-240).

Balto-Slavic.—A. P. Coleman, "Jak and jako in Polish" (*Language* vii, 131-135). *F. R. Preveden, "Church Slavonic korab and Greek κάραβος" (*Language* vi, 279-296). J. D. Prince, "Surviving Turkish Elements in Serbo-Croatian," (*Jour. Am. Or. Soc.* li, 241-262). *Frederick T. Wood, "The Accentuation of Nominal Compounds in Lithuanian" (*Language Dissertation* vii, p. 90).

Greek and Latin.—A. Cameron, "Latin Words in the Greek Inscriptions of Asia Minor" (*Am. Jour. Philol.* lii, 232-262). C. H. Carruthers, "Studies in Greek Noun Formation—Dental Terminations IV, i. words in—" (*Class. Philol.* xxvi, 178-195). A. Fossum, "Hapax Legomena in Plato" (*Am. Jour. Philol.* lii, 205-231). F. H. Fowler, "The Origin of Latin *qui*-Clauses" (*Language* vii, 14-29). *R. G. Kent, "On Long *i* in Latin Terminations" (*Language* vi, 304-318). *Id.*, "The Alleged Strength of the Initial Syllable" (*Language* vii, 179-189). E. B. Lease, "The Ablative Absolute Limited by Conjunctions" (addenda to *AJP* xlix, 348 ff., *Am. Jour. Philol.* lii, 175). W. Petersen, "The Three Greek Aorists in—*κα*" (*Language* vii, 125-130). J. J. Schlicher, "The Historical Tenses and Their Functions in Latin" (*Class. Philol.* xxvi, 46-59). H. Standerwick, "The Etymology of

Dialectic Greek *ποι* and Its Cognates" (*Language* vii, 173-178).

Romance.—N. S. Bement, "The Subjunctive in Relative Clauses from Commynes to Malherbe" (*Philological Quarterly*, x, 294-306). Cf. also the second article of R. G. Kent cited under Greek and Latin above.

Germanic.—*H. Collitz, "Zwei Hapax Legomena der gotischen Bibel" [*gakunds* "περιποίη": *uf gakundz* "ἀρχόμενος"] (*Language Monographs* vii, 60-83). E. E. Ericson, "The Use of Old English *swa* as a Pseudo-Pronoun" (*Jour. Eng. Ger. Philol.* xxv, 6-20). C. M. "Lotspeich, Notes on the Personal Pronouns in Germanic" (*ibid.*, 150-151). *K. Malone, "Where did Middle English Begin?" (*Language Monograph* vii, 110-117.) E. Metzenthin, "The Codex Discissus of Otfrid's Evangelienbuch" (*Stud. Philol.* xxviii, 461-480). A. Senn, "Contribution to Gothic-Finnish Relations" (*Jour. Eng. Ger. Philol.* xxv, 143-149). A. M. Sturtevant, "Shift of Spirant to Stop in a Combination of Two Spirants in North and West Germanic" (*Language* vii, 190-193). *Id.* "Notes on Old Norse Phonology" (*Jour. Eng. Ger. Philol.* xxx, 155-164). *Id.*, "Gothic Notes" (*Germanic Review* vi, 54-68). A. F. Zieglschmied, "'Werdan' and 'wesan' with the Passive in Various Germanic Languages" (*ibid.*, 389-396).

LIBRARIES

BY GERTRUDE DELAVAN BREWER

AMERICAN LIBRARY ASSOCIATION

PURPOSE AND EXTENT

To make books and other printed matter increasingly available to all the people is the primary purpose of libraries—a purpose which links them to every movement for the promotion of popular education, whether of children or adults of certain national, racial, or social groups; or of those under particular physical handicaps. In the continental United States there is one library to every 11,226 persons.

according to statistics for 1929, published this year by the U. S. Office of Education. The total number of libraries with collections of 3,000 or more volumes is 6,429, and the total number of books which they possess is approximately 162,000,000, an increase of 33,500,000 in the six years from 1923 to 1929. Total circulation figures for all libraries in the United States are not available, but reports of libraries in 41 leading cities show

a total circulation of 134,103,055 in 1929-30; as contrasted with 124,016,051 in 1928-29.

LIBRARY EXTENSION

Growth of the Movement.—In spite of serious economic handicaps during the past year, increased appropriations for the work of state library extension agencies have been provided in 14 states. Eight counties established county-wide library service in this period. These instances of progress show a recognition of the special need for books at this time of enforced leisure for many people.

Federal Aid.—The need of Federal aid for establishing local library service where none now exists has been recognized by the Council of the American Library Association. On June 22, 1931, the Council passed a resolution advocating a Federal appropriation as an equalizing and stimulating fund for rural public library service, but, in view of the general economic situation, further action in the matter has been postponed until a more favorable time.

Rural Library Experiments.—Vermont is conducting a regional library experiment in an area comprising parts of three adjoining counties, —Chittenden, Franklin, and La Moille. Twenty-eight small town libraries in this section are being aided with advisory visits of a regional librarian and with book loans. The project is under the auspices of the Vermont Commission on Country Life, financed by a special grant. The Fraser Valley (British Columbia) rural library demonstration has completed a successful first year, and the British Columbia Library Commission has opened a district office in Prince George to provide more adequate service for the large North Central District. In Maine library districts are being organized to provide books for surrounding towns from a well established city library. Seven district libraries are now in operation in that state.

Progress in the South.—In the South during the past year a growing awareness of the library as an essential service agency has been evi-

denced. For example, the Committee on Reading of the South Carolina Teachers Association, in a recently printed report on the importance of reading, has urged the establishment of county and other public libraries. The regional field agent of the American Library Association is cooperating in a study of economic and social conditions and problems of the southern Appalachian highlands, which is being conducted by the U. S. Bureau of Agricultural Economics with the aid of other agencies. Book service is one of the needs of this under-privileged section.

National Conferences.—The need for providing adequate library service for children everywhere was stressed in the recommendations of the Committee on Reading of the White House Conference on Child Health and Protection. The President's Conference on Home Building and Home Ownership has included in its committee studies the information services of public libraries in the field of the Conference. The report shows how libraries are aiding the would-be home builder by supplying books, pamphlets, and visual material.

Legislation.—A measure providing state aid for county libraries was adopted by the Pennsylvania Legislature. Florida passed a permissive county library law, while similar legislation was approved by the Washington Legislature only to be vetoed by the governor. Michigan enacted a law permitting the establishment of regional libraries, the first state to provide such legislation. A complete revision of the Arkansas municipal library law is a forward step in that state. Reorganization of state departments in Maine resulted in placing the Maine State Library in the state department of education. The Alabama Legislature passed a bill, carrying an appropriation, for the establishment of a library commission, but the governor vetoed it.

ADULT EDUCATION

Readers' Advisory Service.—Six public libraries, among them the Carnegie Library of Pittsburgh, inaugurated individual advisory service to

adult readers during the year. Libraries which have organized readers' advisory service now number 42.

Study of Reading Interests.—

One of the first contributions from the researches of the Graduate Library School of the University of Chicago is *What People Want to Read About*, a study of the reading interests and habits of adults, by Douglas Waples and Ralph W. Tyler.

Alumni Education.—On Dec. 30, 1930, the Board on the Library and Adult Education of the American Library Association indorsed a study of books and libraries in relation to the changing curricula in universities and colleges and voted to cooperate with an advisory committee of college librarians in the promotion of alumni education. The committee instructed its chairman, Charles Harvey Brown of Iowa State College, to outline such a study and submit it for criticism to the committee and to the officers and directors of the College and Reference Section of the American Library Association. A vast number of universities and colleges have inaugurated vigorous experimental programs of alumni education, in response to graduates' interest in continuing education, first expressed in the deliberations of the American Alumni Council. These programs vary considerably. The alumni reading lists of the University of Michigan, issued during the year by the Michigan Library Extension Service in cooperation with the Bureau of Alumni Relations, demonstrate one method for the development of a program in continuous education for the American college graduate.

University Extension.—*University Extension and the Library*, a survey of the need of extension students for library service and of methods of supplying it through cooperation on the part of university extension agencies, university libraries, and state and local public libraries, was published by the National University Extension Association and the American Library Association.

"Reading with a Purpose."—

Guides to serious reading in more

than 60 different subjects are now available in the "Reading with Purpose" courses, published by the American Library Association. Each of these courses, written by an authority, is composed of an introductory essay and brief notes on half dozen books, so chosen as to give a general survey of the subject. Study outlines for the use of discussion groups and others also are included. The 1931 additions to the series are *Russian Literature*, by Avrahm Yarmolinsky; *The Pacific Area in International Relations*, by J. B. Condliffe; *Evolution*, by Sir J. Arthur Thomson; and *Farm Life*, by Clarence Poe.

Radio Programs.—Cooperation with the radio programs of the National Advisory Council on Radio in Education, the National League of Women Voters, and the American School of the Air, and with other educational broadcasts was continued and developed in libraries throughout the country. *The Broadcaster and the Librarian*, by Francis K. W. Drury, published by the National Advisory Council on Radio in Education, summarizes the actual and proposed activities of libraries in this field.

Prison Libraries.—The work of the library as an adult educational agency in penal institutions was summarized, and an expanded program was developed by John M. Chancellor, supervising librarian of the United States Bureau of Prisons, in the survey, *The Education of Adult Prisoners*, by Austin H. MacCormick, published by the National Society of Penal Information.

EDUCATION FOR LIBRARIANSHIP

Increase in Library Schools.—

With the opening of five new library schools in the fall of 1931 no section of the United States is now far removed from a center of professional library training. These new schools are located at the University of North Carolina, the University of Denver, Louisiana State University, Our Lady of the Lake College (San Antonio, Tex.), and the College of

William and Mary. The last two offer courses in school library work only. The 25 library schools now accredited by the Board of Education for Librarianship of the American Library Association include three on the Pacific coast, eight in the Middle West and West, eight in the eastern and Atlantic coast states, five in the South, and one in Canada. Twelve other institutions in all sections of the country offer a year's work in library science.

Entrance Requirements and Enrollment.—Nine of the accredited schools require college graduation, and nine others require three years of college work, for entrance. Two other schools require three or four years in college, according to the curriculum in which the student enrolls. In 1930-31 the 25 accredited library schools enrolled 1,394 students; five other library schools enrolled 235 students.

Training Standards.—The Association of Colleges and Secondary Schools of the Southern States, in December, 1930, adopted standards for the training of school librarians and teacher-librarians to be employed in high school libraries, for which standards had been adopted earlier by the Association. The standards for training include requirements or recommendations concerning organization and administration of the department of library science, the teaching staff, equipment, library facilities, financial status, requirements for admission, and curriculum.

Certification Requirements.—Twenty-three states and the District of Columbia now have certification requirements for librarians.

AMERICAN LIBRARY ASSOCIATION

Officers.—Officers for 1931-32, elected at the fifty-third annual conference of the American Library Association, are: Josephine Adams Rathbone, vice-director, Pratt Institute School of Library Science, Brooklyn, New York City, president; Charles E. Rush, associate librarian, Yale University Library, New Haven, Conn., first vice-president; Beatrice Winsor,

librarian, Public Library, Newark, N. J., second vice-president; and Matthew S. Dudgeon, librarian, Public Library, Milwaukee, Wis., treasurer. The conference was held June 22-27, in New Haven, Conn., and was attended by the largest number in the history of the Association—3,241 of its more than 14,000 members.

Newbery Medal Award and Conference Meetings.—The John Newbery Medal, awarded annually by the Association's Section for Library Work with Children, for the most distinguished children's book of the year, was presented to Elizabeth Coatsworth for *The Cat Who Went to Heaven*. The Council of the Association adopted resolutions favoring entrance of the United States into the International Copyright Union, abrogation of the requirement that books be manufactured in the United States if they are to have copyright protection here, and abolishment of the restrictions which hamper libraries and individuals in importing foreign books for use. The Council also called public attention to the fact that economic depression, with its accompanying unemployment, had increased the demands upon library facilities and urged that no reduction should be made in appropriations for library books or service. More than 30 Association groups held round table meetings. Affiliated national societies meeting with the Association at the conference were the American Association of Law Libraries, the League of Library Commissions, and the National Association of State Libraries.

Publications.—Important publications issued by the American Library Association in 1931 were: *List of Books for College Libraries*, by Charles B. Shaw; *Books for Junior Colleges*, by Edna A. Hester; a list of *Recreational Reading for Young People*; *What People Want to Read About*, by Douglas Waples and Ralph W. Tyler (published jointly with the University of Chicago Press); *Handbook for Teacher-Librarians*; *Essentials in Library Administration*, by Ethel F. McCollough and Maud Van Buren; *Catalogers' and Classifiers'*

Yearbook, No. 2; Children's Library Yearbook, No. 3; School Library Yearbook, No. 4; and College and Reference Library Yearbook, No. 3.

FUNDS FOR LIBRARY WORK

Books for the Blind.—The Pratt-Smoot Bill, appropriating \$100,000 annually for books for the adult blind, was passed by Congress in 1931.

Carnegie Grants.—The grants voted by the Carnegie Corporation during the fiscal year 1929-30 included \$729,750 to be expended for library interests. More than half of this amount was appropriated for the purchase of books by college libraries. A study of rural school libraries and county library service to schools is being made by Edith A. Lathrop of the U. S. Office of Education, with a grant-in-aid from the Carnegie Corporation. More than a dozen librarians are doing graduate study under library fellowships provided through grants from the Corporation.

Other Funds.—Gifts to libraries made during the year include: \$3,500,000 for erection of a new library at Columbia University (to be completed in 1933), the gift of Edward S. Harkness; \$375,000 given to the library of Mount Holyoke College by the General Education Board; \$300,000 for erection of a new library at Atlanta University, Atlanta, Ga., granted by the General Education Board; and \$200,000 left to the public library in Morristown, N. J., in the will of Grinnell Willis, half to be added to the library's endowment fund and half to create the Grinnell Willis Book Fund.

NEW BUILDINGS

Within a five-year period, beginning in 1931, the University of Chicago will spend \$6,000,000 in the reorganization of its libraries, a project which will involve the housing in a single new library building of the books at present in the general library (Harper Memorial Library) and in the departmental libraries in various buildings. Among library buildings in course of construction or completed during the year are: the

42-story Library Tower in Brooklyn, New York City, costing \$7,000,000; the new home of the Enoch Pratt Free Library, Baltimore, costing \$1,198,000; the main public library in Long Beach, Calif., costing \$1,000,000; the main public library in Berkeley, Calif., costing \$300,000; the central library in Evansville, Ind., costing \$300,000; the James E. Morrow Library at Marshall College, Huntington, W. Va., costing \$225,000; the library at East Texas State Teachers College, Commerce, Tex., costing \$200,000; the library at Tuskegee Normal and Industrial Institute, Tuskegee, Ala., costing \$200,000; the public library at Highland Park, Ill., costing \$150,000; and the public library in Morristown, N. J., costing \$100,000. The University of Kentucky, Lexington, Ky., dedicated its new library building in October.

INTERNATIONAL COOPERATION AND MEETINGS

At the meeting of the International Committee of the International Federation of Library Associations, held at Cheltenham, England, in August, action was taken toward facilitating international loans of books between libraries and to further the study of statistics on the national production of books. Tentative preparations for publishing the *Union Catalogue of the Libraries of Prussia* were announced. The meeting of the (British) Library Association followed that of the International Committee and was attended by the Committee's members. Significant developments discussed were the increase in county library service and the perfection of the organization of the Central Lending Library in London. Dr. William Warner Bishop, who, with Dr. Louis Round Wilson, represented the American Library Association at both meetings, was elected president of the International Committee and of the Federation. Emily Van Dorn Miller and Josephine Taber were official delegates from the American Library Association to the Congrès International de

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

la Lecture Publique, held in Algiers, Algeria, in April.

BIBLIOGRAPHICAL WORK

Project "B."—Project "B," financed by a Rockefeller five-year annual grant of \$50,000, includes a group of operations undertaken to increase the bibliographical apparatus

of the Library of Congress in aid of research. Work on the Union Catalogue of the Library of Congress has reached its first objective,—the location of 6,000,000 titles in American libraries, representing four years' accomplishment. The Union List of Special Collections has been increased to include 7,500 collections.

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

(For further information, the reader may address the following organizations)

GENERAL

AMERICAN ACADEMY OF ARTS AND LETTERS, 633 W. 155th St., New York City.
 AMERICAN ACADEMY OF ARTS AND SCIENCES, 28 Newbury St., Boston, Mass.
 AMERICAN BOOKSELLERS' ASSN., 15 Park Ave., New York City.
 AMERICAN COUNCIL OF LEARNED SOCIETIES, 23 University Hall, Cambridge, Mass.
 AMERICAN LIBRARY ASSN., 520 N. Michigan Ave., Chicago, Ill.
 AMERICAN NEWSPAPER PUBLISHERS' ASSN., 270 Madison Ave., New York City.
 AMERICAN PHILOSOPHICAL SOCIETY, Independence Sq., Philadelphia, Pa.
 AMERICAN SOCIETY OF COMPOSERS, AUTHORS AND PUBLISHERS, 1501 Broadway, New York City.
 AMERICAN SOCIETY OF NEWSPAPER EDITORS, The Journal, Milwaukee, Wis.
 ASSOCIATED PRESS, 383 Madison Ave., New York City.
 ASSN. OF FOREIGN PRESS CORRESPONDENTS IN THE U. S., 66 Broadway, New York City.
 ASSN. OF NATIONAL ADVERTISERS, 420 Lexington Ave., New York City.
 ASSN. OF NEWSPAPER ADVERTISING EXECUTIVES, Indianapolis News Bldg., Indianapolis, Ind.
 BIBLIOGRAPHICAL SOCIETY OF AMERICA, Grosvenor Library, Buffalo, N. Y.
 GERMAN PRESS CLUB OF N. Y., 21 Frankfort St., New York City.
 MODERN LANGUAGE ASSN. OF AMERICA,

New York University, New York City.
 NATIONAL ASSN. OF BOOK PUBLISHERS, 347 Fifth Ave., New York City.
 NATIONAL EDITORIAL ASSN., 131 E. 6th St., St. Paul, Minn.
 NATIONAL INSTITUTE OF ARTS AND LETTERS, 633 W. 155th St., New York City.
 NATIONAL PUBLISHERS' ASSN., 15 W. 37th St., New York City.
 PEOPLES INSTITUTE, 70 Fifth Ave., New York City.
 UNITED PRESS ASSN., 61 Park Row, New York City.
 U. S. PUBLISHERS ASSN., Inc., 522 Fifth Ave., New York City.

AMERICAN LITERATURE

AMERICAN DIALECT SOCIETY, Warren House, Cambridge, Mass.
 AUTHORS GUILD, 2 E. 23rd St., New York City.
 AUTHORS LEAGUE OF AMERICA, Inc., 2 E. 23rd St., New York City.
 CATHOLIC WRITERS GUILD OF AMERICA, 128 W. 71st St., New York City.
 NATIONAL ASSN. FOR AMERICAN SPEECH, 2480 Broadway, New York City.
 NATIONAL COMMITTEE TO STUDY JUVENILE READINGS, 1 Madison Ave., New York City.
 SIMPLIFIED SPELLING BOARD, Lake Placid Club, Essex County, N. Y.

LANGUAGE AND LITERATURE

AMERICAN CLASSICAL LEAGUE, First National Bank Bldg., Princeton, N. J.

XXV. LITERATURE AND LANGUAGE

AMERICAN ORIENTAL SOCIETY, Yale University, New Haven, Conn.	DICKENS FELLOWSHIP OF NEW YORK 119 E. 19th St., New York City.
AMERICAN PHILOLOGICAL ASSN., Wes- leyan University, Middletown, Conn.	INTERNATIONAL DANTE SOCIETY, 15 W. 107th St., New York City.
DANTE LEAGUE OF AMERICA, INC., 15 Gramercy Park, New York City.	MODERN LANGUAGE ASSN. OF AMER- ICA, Bryn Mawr College, Bryn Mawr, Pa.

DIVISION XXVI

THE ARTS

ARCHAEOLOGICAL DISCOVERY

By RALPH VAN DEMAN MAGOFFIN

PROFESSOR, NEW YORK UNIVERSITY

UNITED STATES

New Mexico.—The work at Chetro Ketl by the School of American Research at Santa Fe under Director Hewett has brought to light a type of construction new to Southwestern archaeology. Many feet below previous excavation a true amphitheatre in fine masonry was discovered. Five superposed stories of the building are now to be seen. The pueblo will probably outrival that at Pueblo Bonita.

MEXICO

Calixthahuaca and Teotihuacan.
—A number of artificial mounds hitherto supposed to be sepulchral in character have been opened. Beneath the stones and earth of the mounds are great buildings in ruins which are probably temples. A complete altar stone like the "sacrificial" stone of Tizoc has been found, and also great quantities of pottery and symbolic figurines. Unique is a large circular temple resembling the tomb of Caecilia Metella near Rome. In it was found a shower bath, the earliest known in the American continent. The discoveries are claimed to prove that the Toltec civilization is the link between the Maya civilization and the later Aztec.

ITALY

Pompeii.—In a Samnite house enlarged to suit its new Roman owner at Via Abbondanza No. 4, A Maiuri brought to light a hoard of magnificent silver plate, better even than the

well-known Boscoreale hoard. It is now housed in the museum at Naples. The most startling find in Pompeii was in one of the rooms of the Villa dei Misteri, known, until Maiuri's recent publication, as the Villa Irem. As the ashes were dug out there appeared leaning against one wall a tinted marble portrait statue of Livia, the wife of Augustus. The paintings in the villa are now accepted as scenes of the initiation of brides into Dionysiac mysteries preliminary to marriage. The work is dated as of the Second Pompeian style, *i.e.*, as about 80 B. C. The brides-to-be are Roman because engagement rings are painted on the fourth fingers of several of the girls, and marriage contracts in rolls are present, which show Roman, not Greek customs.

Herculaneum.—Maiuri has cleared out more than a score of houses. In one was found two marble groups of excellent style of hinds attacked by hunting dogs.

Ardea.—The International Mediterranean Research Association has shown Ardea to have been a large city in the sixth century B. C., probably more than a match for Rome at that time. The substructures of an Iron Age temple on the acropolis have been found, and among the small objects, the many *fibulae* and some interesting revetments of terra cotta are most important.

Saccopastore.—Near Rome a skull of the Neanderthal type has added Italy to the proven very ancient prehistoric regions.

Anzio.—In the villa Sarsina a polychrome mosaic of Hercules Bibax has been uncovered. The villa of Nero has also been partially laid bare and a series of mosaics found, the technique of which is that of fine carpetry.

Nemi.—The first galley is now permanently located under a wooden canopy, and a museum of the objects found, installed near by. The lake has been drained so that the second galley is also clear of the water. Several fine pieces of bronze have been found, and two anchors. One is of wood with cross pieces of lead. The other is partly bronze, and weighs 1275 pounds.

Christian Catacombs. — Relief sculpture has been found that dates from the third to the fifth centuries. In the catacomb of St. Sebastian is the oldest example of the nativity. It is on the side of a sarcophagus and represents the Virgin, Child, and St. Joseph. Thus far five representations of the Adoration of the Magi have been identified, of which the best is in the catacomb of Domitilla. In the larger catacomb of St. Agnes is a fourth century Madonna painting showing her in the attitude of prayer. The head of the Child is painted in front of her.

Rhodes.—G. Jacopi has discovered at Camirus a number of tombs containing fine pottery dating from the seventh to the fifth centuries B. C. He also found a stone sarcophagus containing vases, statuettes, and dishes, all part of funerary furniture of the sixth century B. C. The best pieces discovered was a marble stele of Crito and Timarista. The work dates in the middle of the fifth century and is Phidian in style.

Cyrene.—The ancient sacred spring, still furnishing the chief supply of water, has been found. The larger *thermae* have been excavated, and inscriptions found showing that Hadrian had restored the Baths after the fire during the Jewish insurrection in the time of Trajan. Important is the discovery of an inscription with the will of Ptolemy VIII. It confirms the statement of Livy that

he bequeathed his kingdom to the Romans. The best piece of scores of sculptural figures and fragments is a portrait head, somewhat mutilated, of Agrippina the Elder, although a Greek bronze head of a man, dating about 450 B. C. is a close rival in value.

Lepcis Magna.—The grandiose flight of steps leading up to the temple of Jupiter Dolichenus is now completely uncovered.

Sabiratha.—The Italian excavators have found the stage front of the theatre. It is decorated with figures in relief, drawn from mythology, drama, and public life.

GREECE

The Athenian Agora.—The first work on this, potentially the greatest of American excavations, one which will probably continue for fifty years, has already guaranteed its importance. Shear and his assistants have found a colossal statue of the Roman emperor Hadrian. The sculptured breastplate shows Athena standing on the wolf, which suckles Romulus and Remus. A headless statue of a woman in the style of Timotheus, an original of the fourth century B. C., is perhaps the most important of the many sculptural pieces found. At the northern end of the Agora the foundations of the Royal Stoa have been uncovered, and at the south end, the base of what is probably the Stoa of Zeus Eleutherios.

The Acropolis.—Director Carpenter of the American School has started the world of classical art by identifying part of a draped female figure as belonging to the west pediment of the Parthenon. It is part of the figure known from the drawings made by Carrey in 1674 as pedimental figure U.

Corinth.—The work at America's continuous dig at Corinth has been profitable. There have been found much geometric pottery, a Corinthian bronze helmet, and a number of toys, among which most interesting are a toy horse, and a rattle. In the theatre district a hoard of coins buried in the time of the Roman emperor Gallienus has come to light. The Roman mar-

ket north of the temple is nearly clear. In the Ceramicus a large number of interesting terra cotta figurines were discovered.

Piræus.—The Greek authorities have dredged up more than three hundred fragments of sculptured marble and bas-reliefs. They are believed by Ephor Kyparissis to be objects gathered for commercial shipment to Rome, and probably sunk when the ship burned in which they were, because traces of fire are on most of the pieces. The most important fragment is a marble head of the emperor Claudius.

Elis.—Oikonomos has discovered a bronze helmet with an inscription on it saying that men of Orchomenos had dedicated it to Olympian Zeus because of the capture of Koroneia. Because of the style of letters Oikonomos refers the dedication to the capture of 447 B. C.

Olynthos.—D. M. Robinson has had another very successful year at Olynthos. New buildings, vases, coins, statuary, and inscriptions were found in great numbers.

Samos.—Buschor, working over the recent excavations of the Heraeum, shows the architectural history of the buildings from the ninth to the end of the sixth century B. C.

Crete.—Sir Arthur Evans, divining from a boy's discovery in a vineyard south of Cnossus of a splendid gold signet ring, the presence of some ancient monument, found a unique structure of which he says, "It is a temple tomb of the Priest Kings, traditionally included under the name of Minos." The tomb dates about 1700 B. C. or earlier, *i. e.*, during the great period of Cnossian thalassocratic supremacy. In the chambers were found many ritual vessels, and several of the "horns of consecration."

Delos.—The French excavators have found a block of four houses built of great pieces of granite, in which were the best mosaics thus far found on the little island that was for a time the headquarters of the Delian Confederacy. A number of good bits of statuary were also discovered.

The Hermes of Praxiteles.—This statue, the one and only statue thus far identified as the personal work of one of the Greek masters of the best period, was challenged recently by C. Blümel as an original. Controversy arose at once. Director Carpenter of the American School at Athens inclined to the old view, but thought the drapery stylistically later than the statue itself. V. Müller takes issue and shows that the drapery proves it is a Greek original. Casson of England professes himself unconvinced. Dinsmoor cites architectural evidence to prove it the Greek original it is claimed to be. Dr. Richter of the Metropolitan Museum is the real protagonist in favor of the standard view of origin, but her views have been strenuously debated. The end is not yet.

MESOPOTAMIA

Babylon.—The German excavations at Babylon have confirmed the accuracy of the proportions of the Tower of Babel as described by Nebuchadnezzar. The measurements of the base have been made and the decision arrived at that the Tower of Babel resembled the ziggurats or ramp-like storied towers of which a number are now known.

Kish.—Excavations have shown that the earliest settlement was in the fifth millennium B. C.; that the town was destroyed by inundation, and rebuilt about 4000 B. C.; that it was inundated and destroyed three more times, and rebuilt about 3500, about 3300, and then destroyed by a very great flood sometime before 3000 B. C. The latter flood is the one claimed by many archaeologists to be the one mentioned in the Old Testament. Langdon has discovered at Kish a Sassanian temple. Kish was probably the earliest of the great capitals of Asia. Langdon, by his discoveries, links the Sassanian culture to the older cultures of Babylonia.

Ur.—L. Woolley has found several tombs of kings of the III Dynasty, among them those of Ur-Engur, the builder of the great ziggurat of c. 2400 B. C., of his son Dungi, and of

his grandson Bur-Sin. Woolley maintains that the deposits of the Great Flood, dating somewhere from 3400 to 3100 B. C., at Ur and Kish, do not coincide.

Jebelet el Beda.—Here have been found what M. v. Oppenheim claims are the oldest gigantic monumental statues thus far discovered. They date in the fourth millennium B. C. They are of the flounced skirt type, and have bird-beaked faces analagous to the statues of the archaic Sumerians. Oppenheim thinks that what he calls the sub-Aryan Hittite culture is as old as that of the Egyptian and the Sumerian-Babylonian civilizations.

Nineveh.—A copper head of a bearded man of the best archaic Sumerian period has come to light; also a stone cylinder with an inscription of Shamshi-Adad I of Assyria. The inscription is about the restoration of the temple of Ishtar, and is thought to be the first proof of the dominion of Agade over north Assyria.

EGYPT

Fayum.—The Italian Archaeological Mission has found at Tebtunis the remains of a crocodile cult. After finding the Sacred Way leading to the temple, there were found altars, cells containing papyri, crocodile mummies, and many vessels for medicinal purposes.

Tell el-Amarna.—At the capital of Akhenaten the fine house of an overseer, and a royal building, have been discovered. A unique find was that of a small silver figure of a Hittite god, inside of a crock of gold.

Tutankhamen's Tomb.—Carter continues to bring wonderful objects out of hitherto unopened chests and boxes. One of the latest things to appear is a wooden portrait head of the Pharaoh showing him at an age of about ten years. He is represented as the Sun god emerging from a lotus flower. The secular throne chair is well known. A replica of it is now in the museum at Reading, Pennsylvania. Now there comes to light Tutankhamen's ecclesiastical throne or "faldstool." On its back is proof of the wavering religious

thought of the Pharaoh. Hieroglyphs side by side give his name in the two forms of the rival creeds, Aten and Amen.

Cairo.—Near the pyramids of Gizeh has been found the sealed tomb of a young woman of the IV Dynasty (3800-3600 B. C.). Her funerary equipment is fairly complete. On the head of her mummy is a beautifully decorated fillet of gold. Many cups and dishes are in the tomb for the later use of the deceased, and there are also a number of fingers and toes of terra cotta, supposedly as substitutes for those of the body, should they decay.

PALESTINE

Tell Beit Mirsim (Kiriath-Sepher).—Kyle and Albright have excavated the area at one place to bedrock, and found that there were ten levels, and also that the town had been destroyed eleven times by fire. Their discoveries make it possible to publish the sequence of Middle Age Palestinian pottery. In strata E and D were the proofs of the Hyksos settlement of c. 1700 B. C. Here a unique stele of a serpent goddess was found. Stratum C (1400-1200 B. C.) was full of archaeological material, among which a scarab of Amenhotep III was important for date. Stratum B is early Israelite. Astarte figurines and other cult objects in this stratum throw considerable light on the popular religion of early Israel.

Beth-Shemesh.—The excavators have found an ostrakon with a Canaanitish alphabetic writing on both sides, and dating about 1600 B. C. The probable origin of the alphabet is now to be pushed back to about 2000 B. C.

Jericho.—Garstang has worked over the excavations and shown the revetment at the front of the mound to be of about 1800 B. C., and the double brick wall at the top of the slope as of about 1600 B. C.

Jerash (Gerasa).—The American School and Yale University have begun the excavation of the temple of Artemis.

Tell el Ajjul.—Sir Flinders Petrie and New York University with H. Dunscomb Colt as assistant, have finished the second year of a fruitful excavation at this tell, some four miles from Gaza. The site was occupied from the time of the Stone Age. Scarabs, pottery, bronze, and gold have come to light and enough has been done to show that the site will probably produce more Hyksos objects than any other site in Palestine. There was also found the skeleton of the oldest horse, about 199 B. C., thus far discovered in Palestine or Egypt.

ASIA MINOR

Alishar Hüyük.—The Oriental Institute of Chicago has found in this site on a hill north of Boghazkeui an epitome of the history of central Hittite Asia Minor. There are seven cultural strata: VII, Seljuk and Ottoman; VI, Roman and Hellenistic; V, 1000 B. C. to Hellenistic; IV, Hittite (1500-1200); III, Early Hittite; II, Old Assyrian (2300-2000); I, Early Bronze Age, c. 2500 B. C.

RUSSIA

Olbia.—In a great necropolis on the Bug river, Greek and earlier burials have been found in amphorae, in shaft-cut graves enclosed by stone walls, and in chamber tombs with

vaulted roofs, and with steps leading to them.

TURKEY

Istanbul.—Casson and Rice have established the position of the original inner and outer walls of the Hippodrome, and have shown that it had no *spina*. They have worked also in the Baths of Zeupippus, and have shown that the Forum of Constantine was outside the old city of Byzantium.

GERMANY

Cologne.—Along the road from Cologne to Bonn, from more than four hundred Roman graves have been taken some 150 vessels of glass and more than that of earthenware. They date in the third and fourth centuries A. D. and prove a glass industry at Cologne of proportions hitherto unsuspected.

NECROLOGY

During the year there have died Orazio Maruchi, Christian archaeologist; Hermann Dessau, epigraphist, and Thomas Ashby, Roman archaeologist and Charles Eliot Norton lecturer on the James Loeb Foundation to the Archaeological Institute of America.

PAINTING

By FRANCES M. HENDERSON

AMERICAN FEDERATION OF ARTS

INFLUENCE OF THE OLDER PRIMITIVE ART

Objective and Trends.—When an effort is made to tabulate the significant developments in the field of art during a given period, it is realized that, in painting particularly, the importance of these developments lies not so much in events as in movements or tendencies which have made themselves manifest and which, over an extended period of time, constitute schools or styles. American painters have increasingly, in recent

years, evidenced in their work a desire for simplification, and to this end have made a serious study of the primitive art of the older nations, not with intent to copy but with the idea of evolving an art which, casting off all traces of European ancestry, would become, in the true sense of the word, American,—a purely nationalistic expression.

Mexican Exhibits in the United States.—Many of the younger and as yet less well known painters of the United States, as well as those of es-

tablished reputation, have spent months in Mexico in intensive study of the ancient art and customs of the country. Already, as a result, the influence of Mexican art may be noted in current exhibitions of paintings, as well as in murals produced for our public buildings. As further evidence of this increasing interest in the arts of Mexico is the tremendous acclaim with which an exhibition of Mexican art circulated among the museums of the United States during 1931 under a grant from the Carnegie Corporation of New York has been met. This exhibition, including paintings and craft work of various kinds by the leading artists of Mexico, has been shown in New York, Boston, Pittsburgh, Milwaukee, Louisville, San Antonio, Albuquerque and Chicago, and in each instance has had extraordinarily large attendance.

The Murals of Diego Rivera.—Furthermore, one of the outstanding figures in the field of mural painting, not only in his own country but in the United States, is Diego Rivera of Mexico City, whose murals in two buildings in San Francisco are among the most important of those executed during the past twelve months. One of these is in the new Stock Exchange Luncheon Club, the other in the lecture room of the San Francisco Art Association. The latter is a fresco, 30 x 45 feet, which is subdivided into rectangles of various sizes depicting the various arts and industries of the locality. Rivera is as yet, however, best known for his paintings on the walls of the Secretariat of Education in Mexico City.

Indian Art.—The same vogue is to be noted, in somewhat lesser degree, for the paintings of the American Indian, which are now being widely exhibited in the art centers of the country. This interest has culminated in the formation of a national organization for the advancement of native Indian art, under the auspices of which an Exposition of Indian Tribal Arts was shown at the Grand Central Galleries, New York, in December,—a notable display, comprising 500

paintings by Indians of over thirty different tribes, some of whom were in attendance and gave exhibits of sand-painting and of their native dances. The President of this lately formed group is John Sloan, well known American painter, who has himself painted in the southwest and has first-hand knowledge of Indian art.

CURRENT EXHIBITIONS

Activity of American Artists.—This is not to say, however, that the year 1931 has brought forth no events of note. On the contrary, American painters have been no less active than in former years and their efforts have been productive of no mean result. A well known art writer and critic has remarked recently that the day of easel painting has passed, intimating that from now on significant developments in this field will be noted in mural paintings and other similar decorative works. But this statement, however true it may prove to be in the years to come, is not verified by current evidences. There is no falling off to be noted in exhibitions of paintings, and from published records it would appear that activity in the production of the so-called easel picture has far exceeded, both in quantity and quality, that of mural paintings.

International Exhibition at Pittsburgh.—In the International Exhibition of Painting set forth at the Carnegie Institute, Pittsburgh, from Oct. 16 to Dec. 7, the thirtieth of this notable series of annual showings, American artists, from the standpoint of prize awards and public acclaim, came off with flying colors. In the words of a critic of one of our leading newspapers, "never before, probably, has the effort of our native artists swept American representation in an International to so high a plane of excellence. It is manifestly America's year." And this opinion would seem to have been shared very generally by those who visited the exhibition. Franklin C. Watkins of Philadelphia, a heretofore little known painter, carried off the

First Carnegie Prize of \$1,500 and the Lehman Purchase Prize of \$2,000 for a painting entitled "Suicide in Costume"; Judson Smith, another American, was awarded first honorable mention and \$300 for his "Deserted Mill"; Yasuo Kuniyoshi, American by adoption and training, received Honorable Mention for a "Still Life"; and Andrew Dasburg, one of the progressives in our present day school, the Allegheny County Garden Club Prize for a flower painting. Other awards went to Raoul Dufy of France, who received the third prize of \$500, and Mario Sironi of Italy, who won the second prize of \$1,000.

Annual Showing at Chicago.—An almost equally comprehensive showing of the work of American painters during the year was to be seen in the 44th Annual Exhibition of Paintings and Sculpture at the Art Institute of Chicago from Oct. 29 to Dec. 13. This exhibition was particularly interesting on account of the fact that lesser known artists from the West and Middle West exhibited for the first time in a national showing with those of greater reputation, and contributed a freshness and vitality not invariably to be found in the annual exhibitions of the established art organizations of the east. The munificence of the cash awards in these annual Chicago showings is notable, prizes this year totaling in value \$5,900. The first prize, the Mr. and Mrs. Frank G. Logan Medal and \$2,500, went to a painter, Morris Kantor, for his "Haunted House." Three additional prizes were won by painters. Reginald Marsh (who is also an illustrator of note), Henry Mattson and Nikolay Cikovsky, while honorable mention was accorded H. Leon Roecker for a landscape and Frances Foy for a figure painting.

MURAL PAINTING

San Francisco.—In the field of mural painting, less completed work is recorded than in some other recent years, although the contributions which have been made in this respect are significant. The San Francisco Stock Exchange, in addition to the

work by Diego Rivera before mentioned, installed a painting by Edward Bruce, which is of outstanding interest. This painting, which hangs over the mantel in the Governing Board room, represents San Francisco's business district and magnificent Bay. In the foreground are the towering buildings of the lower city grouped with regard to contrasting effect rather than photographic exactness in such wise that each building may be identified, while in the background are the Marin Hills, the shore line of Richardson's Bay, and the intervening waters. Other painters who have been commissioned to execute works for this building are Ralph Stackpole, Robert Boardman Howard, Otis Oldfield, Ruth Cravath, Adaline Kent and Clifford Wright. In the San Francisco Public Library five murals by Bottardo Piazzoni were placed. These murals, the subject of which is "The Sea," are a part of a series commissioned of this artist by an association especially formed for the purpose.

Los Angeles.—Los Angeles has likewise provided important commissions for artists in this field. In the Public Library a series of colossal paintings by Dean Cornwell were installed early in the year. These paintings were executed in the artist's London studio, where he and his assistants have been engaged in the work since 1927. They depict the colorful history of Southern California from the time of discovery through the era of Spanish missions, the days of the "forty-niners," and finally the beginnings of the modern city. The series includes in all 250 figures, each twice its natural height and all drawn to scale. A series of mural paintings was completed by Hugo Ballin for the Title Guarantee and Trust Building, Los Angeles; and a panel entitled "Power" by the same artist, installed in the new Edison building in that city.

Boston.—An important addition was made to the public works of art in Boston with the completion, in October, of Richard Andrews' decoration for the State House, depicting an epi-

sode in the service of the Sixth Massachusetts Regiment during the Civil War, the second work by this artist to be placed in the State House.

Chicago.—John W. Norton received the distinguished award of the Gold Medal in Painting of the Architectural League of New York for his decorations in the Tavern Club of Chicago. A large decoration in modern style representing Ceres, likewise by Mr. Norton, was installed in the main trading room of the new Chicago Board of Trade Building. Jules Guerin, who stands in the first ranks of our American mural painters, completed a group of nineteen panels depicting "The Markets of the World" for the lobby of the Merchandise Mart in Chicago. St. Stephen's Church in the same city received as a gift from Emile Zoir, a Swedish painter who has lately taken up residence in this country, his series of large paintings setting forth episodes in "The Creation." Charles R. Knight, well known for his paintings of animal and plant life, completed a series of twenty-eight murals for the Field Museum of Natural History in Chicago. These paintings represent various phases of prehistoric life.

MEMORIAL ORGANIZATIONS AND FUNDS

The Abbey Bequest.—An important announcement bearing on the future of mural painting in America is that of the bequest of Mrs. Abbey, widow of Edwin Austin Abbey (a painter of earlier days whose works are to be found in many of our public buildings) of practically her entire estate to the advancement of art. To the National Academy of Design was left \$100,000 and eight-elevenths of the residue of Mrs. Abbey's estate (the value of which has not yet been determined) "to form the Edwin Austin Abbey Memorial Trust Fund for Mural Painting in the United States of America. . . ." Of this residue two-elevenths are to be used "as an endowment for the foundation and maintenance of professorships and classes in decorative design and mu-

ral painting and for no other purpose." Another fund provided by the bequest is to be used for the preparation of scholars for the competition for the scholarships offered in London by the council of the Incorporated Edwin Austin Abbey Memorial Scholarships (for mural paintings) to men and women who are either citizens of the United States or British subjects. To the Royal Academy, London, Mrs. Abbey left her house and lot, known as Chelsea Lodge, for a museum for the people of Great Britain and the benefit of the public. This includes the contents of the lodge, with works of art, silver plates and Mr. Abbey's paintings, drawings, studies and sketch books.

The Hawthorne Fund.—Following the death, in 1930, of Charles W. Hawthorne, one of the leading figures in American painting for the past decade or more, a committee has been formed for the establishment of the Hawthorne Memorial Fund, which shall be a perpetual reminder of this painter's contribution to art, both through his work and his teaching. Disposition of the fund to be secured has not been determined upon, but it is thought that if the size of the amount permits, it may be used for the erection of a building to be known as the Charles W. Hawthorne Memorial Art Gallery.

Benjamin West Society.—Further honor has been paid to the memory of one of the founders of our American school of portrait painting by the establishment at Swarthmore College, Pennsylvania, of the Benjamin West Society, among the objectives of which are the erection of a building at the college to contain a permanent collection of American Art, a program of regular exhibitions, the publication of a series of articles on art subjects, and the restoration of the home of Benjamin West to its original state, with furniture of the period.

ART AWARDS

Foreign Honor for G. W. Edwards.—Among the American painters who have been honored by for-

eign governments during the year is George Wharton Edwards, of Greenwich, Conn., whose painting, "The Castle of Turregano, Spain," was purchased by the Minister of Fine Arts of France for the State Collection of the Luxembourg.

Guggenheim Awards.—The Guggenheim Foundation, which awards annually a number of fellowships for creative work in the fields of art, literature, music, etc., conferred seven of their awards for 1931 upon painters. The painters so honored are Alexander Brook, Harry Gottlieb, Joseph Pollet, Marsden Hartley, Emil J. Bistran, Doris Rosenthal and Ione Robinson. The four last named are pursuing study under these fellowships in Mexico.

MUSEUMS AND GALLERIES

In this very brief record of events connected with the art of painting in America during the past twelve months, mention has still to be made

of the various museums and galleries which have been opened in different parts of the country, the influence of which will undoubtedly be felt in the art of future years. Such are the Whitney Museum of American Art in New York City, founded by Mrs. Gertrude Vanderbilt Whitney and dedicated wholeheartedly to the display of works by American artists; and the John and Mable Ringling Art Museum at Sarasota, Florida, housing the very remarkable collection of paintings and other works of art of the well known circus owner. Also during the year two exceptionally notable collections of paintings—those of the late Henry C. Frick of New York, and Henry Walters of Baltimore—have come, through bequest, into public ownership, from henceforth to be visited and enjoyed by all who are so minded. To each of these galleries might be devoted much more than a single article.

SCULPTURE

By ROSE V. S. BERRY

ART CRITIC AND WRITER

GENERAL

Those familiar with American art are constantly seeking the art that is American. In the past season exhibitions have been given by sculptors—American according to citizenship—born anywhere in Europe, and several of Oriental and Negro birth. Yet, there have been those who, with excellent reason, have suggested that there is an American sculpture comparable with the best that other nations are producing. Admitting that American sculpture has well defined foreign tendencies, the more conservative opinion might be that there are American characteristics, but in establishing them, they are not where they are expected. There are American sculptors loyal to the training of Mercié, Frémiet, Falguière and others; Rodin pupils still revel in rough-

ened surfaces; while others share with Maillol and Despiau the more ponderous, inactive beauty of the Pre-Phidian period. The American *Pris de Rome* sculptor, with his meticulous craftsmanship and classical ideals is more evident each year; contrasting with these are the sculptors who express their reaction to the powerful barbaric idol and fetish of the African savage. Ancient Chinese sculpture, the stylization of Angkor Wat, the Incas, and the Aztecs, are sources for much modern conventionalization. An ever-increasing group accepts the bulked mass and severe simplicity that come with direct cutting in stone and wood, and some defy all law and present crudity and distortion. The decorative problem, the power of media, extravagant simplification and the theory of abstraction

are factors in modern American sculpture as they are in foreign sculpture. Running through most of the American art, however, are persistent and consistent predominating phases: fine craftsmanship; deftness in many media; dignity and pathos opposed to the quaintly humorous; much that is beautiful without being sentimental; an extraordinary naturalness and none of it sensual, would appear to be the actual American expression.

EXHIBITIONS AND ONE-MAN SHOWS

National Academy of Design.—For the first time in the history of its 105 years of existence, the National Academy of Design excluded non-members from its Winter Exhibition. The amount of sculpture included was less than usual, and the Academy declined to take its own awards.

Modern Museum of Art.—As if to compare the academician and the non-academician, the Modern Museum of Art gave a comprehensive exhibition of the work of seven sculptors of decidedly modern trend. Hunt Diederich, A. Stirling Calder, Robert Laurent, Gaston Lachaise, Anna Glenny, and William Zorach, made an excellent demonstration of the merit of their work; collectively, the exhibition gave prominence to the exhibitors.

Women's Exhibit.—A second group exhibition of interest was that of several women:—Sonia Brown, Minna Harkavy, Marion Walton, Helene Sardeau, and Anna Glenny. Their show was notable for the absence of frog-babies and nymphs, and outstanding for its rugged strength.

Art Center Bronzes.—A third exhibition of importance was that organized by the Art Center, including thirty-three prominent sculptors, each of whom was represented by small bronzes appropriate for the home. The American small bronze is too often misunderstood, it is not necessarily the reduction of a larger bronze. Instead, it is often the original, bearing the marks of the sculptor in its modeling, and is the masterpiece from which the enlargement will come. This

exhibition was booked for the season, going far West.

Animal and Garden Sculpture.—The exhibition at the Pearson Galleries of the American animal sculptors had much that was excellent. The spring shows of garden sculpture were among the best exhibits of the year.

Max Kalish.—Returning from two years in Paris, Max Kalish exhibited eighteen marbles and seventeen bronzes in New York City. It was a good show, many of his subjects were from the man in industry. Kalish's "Monument to Abraham Lincoln," from Cleveland, Ohio, is ready for installation.

William Zorach.—The exhibition was outstanding. "The Mother and Child," cut from one huge block of rose marble, received much praise.

Robert Laurent returned from Europe with a large collection of sculpture which was favorably received; his work has strange beauty with naturalistic design well cared for.

Allan Clark.—Allan Clark's extraordinarily fine sculpture of the American Indian was exhibited at the Art Museum of Montclair, N. J.

The Harmon Foundation Exhibit, brought to the fore the work of two Negro sculptors: Sargent Johnson of Berkeley, California, and Richmond Barthé of New York City.

AWARDS, PRIZES AND FELLOWSHIPS

The American Academy of Arts and Letters bestowed a medal for distinction in sculpture to Mrs. Anna Hyatt Huntington.

Pennsylvania Academy.—The principle sculpture prizes of the Pennsylvania Academy of Fine Arts went to "Eve," by Gladys Edgerly Bates; and to "Dionysius," by Edward McCartan. Both subjects were classically treated.

National Academy, Speyer and Barnett Awards.—The National Academy of Design awarded the Elizabeth N. Watrous Gold Medal to Laura Gardin Fraser's statue, "Simplicity." Katherine Lane's "Circus Horse," received the Speyer Me-

morial Prize; "My Father," by Angelo Ziroli, received the Barnett prize, each carrying with them \$300.

Logan Medal and Prize.—The Chicago Annual, of the Art Institute, awarded the Frank Logan Medal and Prize of \$2,500, to "The Water Carrier," of Heinz Warneke. "The Black Panther," by Edward Chassaing, received the Logan Prize of \$500.

The Chicago American Exhibition, this year (1931-32) gives the second Logan Medal with \$1500, to "Mother and Child," by William Zorach. The third Logan Medal with \$750, goes to "Torso," by John Storrs.

Other Awards.—The Southern California Annual Exhibition, at San Diego, gave its First Prize and \$500, to Donal Hord's "Young Maize."

The National Association of Women Painters and Sculptors, gave prizes to Katherine W. Lane, and Vittoria Mengarini, with Honorable Mention to Brenda Putnam.

The Midwestern Annual Exhibition, at Kansas City, awarded its Gold Medal to Edward Lawhon's "Torso in Stone."

The National Arts Club, of New York, gave F. C. R. Roth the Sculpture Medal and Honorable Mention.

Six Cresson Fellowships, each carrying \$1,200, were given to Sculpture Students, by the Pennsylvania Academy of Fine Arts.

The Guggenheim Scholarships for sculpture included a second grant to Harold Cash, who is in the Belgian Congo studying Negro art, and grants to Oronzio Malderelli, and Reuben Nakian.

The *Prix de Rome* went to W. T. Mosman, a student of the Fine Arts Department of Yale University.

MEMORIAL, MONUMENTAL AND CIVIC SCULPTURE

Outstanding Memorials.—"The Beyond," a memorial by Harriet Frishmouth, has been placed in Brockton, Mass. Lorado Taft's more than life-sized "Crusader" has been erected at the tomb of Victor Lawson, founder of the Chicago Daily News. "The General Irving Hale Memorial" for

Colorado's State Capitol, is being done by Phimister Proctor. A bust of Thomas Jefferson, by Attilio Piccirilli, to pair with the bust of Lafayette, (on either side of the Houdon life-size portrait of Washington), has recently been placed in the State Capitol, at Richmond, Va. James Monroe, by Hermon MacNeil; Walt Whitman, by Chester Beach; James Whistler, by Frederick MacMonnies; and James Fenimore Cooper, by Victor Salvatore are among the recent additions to the American Hall of Fame. Full-figured statues of Fra Junipero Serra, by Ettore Cadorin, and Thomas Starr King, by Haig Patigian, have been placed by California, in the Statuary Hall of the Capitol at Washington.

Illinois Hall of Fame.—The University of Illinois leads the way to a fine idea in beginning its own Hall of Fame. Distinguished editors of the state constitute the first group. Joseph M. Medill, founder of the Chicago Tribune, and Henry W. Glendenin, for fifty years with the Illinois State Star, were modeled by Lorado Taft. William C. Davis, was modeled by Albin Polasek. Edward Wylls Scripps was modeled by Jo Davidson.

Arlington Bridge.—The Titanic Memorial, by Gertrude Vanderbilt Whitney, and the Ericsson Memorial, by James Earle Fraser, have been placed where they become a part of the Arlington Memorial Bridge group.

The Memorial to Samuel Gompers, by Robert Aitken, has been approved by the National Art Commission, and will be erected in Washington, D. C.

Public Buildings.—The last of the sculptural decorations, by Lee Lawrie, for Nebraska's State Capitol, and the Los Angeles City Hall, are in place. Lorado Taft's sculpture for the Louisiana State Capitol is nearing completion. Three of the panels, for the Folger Library, by John Gregory, have recently been placed.

AMERICAN SCULPTURE IN EUROPE

London.—Work from eleven women sculptors was included in the ex-

hibit sent by the National Association of Women Painters and Sculptors to London. An exhibition in bronze and marble, of contemporary portraits, by Jo Davidson in London, drew high praise from the English critics. Jacob Epstein's "Genesis" received some scathing comment from the London press.

Italy.—The Italian Government at its International Exposition at Bologna, gave a Cross of Merit and a Gold Medal to Richard H. Recchia, for his life-size statue "Flight." While acting as Chief Sculpture Instructor in the American Academy in Rome, Albin Polasek modeled a large garden group for Mrs. Anna Hyatt Huntington.

Germany.—A bust of the late Thomas A. Edison, by Mrs. Evelyn Longman Batchelder, was recently installed in the Deutsche Museum's Hall of Fame, in Munich.

Iceland.—A. Stirling Calder's Leifr Eiricsson, a statue of gilded bronze, ten feet high mounted on a pedestal fifteen feet high, now stands on a hill commanding the harbor of Reykjavik, Iceland.

NEW MEDALS

The following sculptors have been commissioned to design medals of honor and award. Ernest Wise Keyser executed the medal that was awarded former Secretary of War Newton D. Baker. Gaetano Cecere designed a Soldier's Medal for the Government. Laura Gardin Fraser has been selected to design the George Washington Commemorative Medal, to be used as a prize in connection with the two-hundredth anniversary of the first President's birth. Brenda Putnam has designed a new medal for The National Association of Women Painters and Sculptors. Walter Hancock has designed the Arthur Hoyt Scott Garden Medal, an annual award, carrying with it one thousand dollars in money.

PLACQUES, PORTRAIT BUSTS AND BAS-RELIEF

Chester Beach has placed two large pieces in the Fine Arts Garden of Cleveland. A fountain group at

Chestnut Hill, Mass.; a portrait bas-relief of Dean James Barr for the Harvard Law School, and a bas-relief portrait of Jane Addams at Hull House, have been placed by Bashka Paeff of Boston. A reclining "Torso" by Archipenko, went into the Brooklyn Museum. "Saint Francis" by Alfeo Faggi; and "The Seated Chief" by Eugene Shonnard, were placed in the Santa Fé Museum. "The Beaten Dog," and "Nautch Dancer," by Wayland Gregory, were accepted by the Cleveland Museum. A portrait bust of John Steven McGroarty, by Julia Bracken Wendt, is to go into the Mission Plaza, at San Gabriel, California.

MEMORIAL EXHIBITIONS

Graffy and Bartlett.—The Boston Museum of Fine Arts gave a Memorial Exhibition for Charles Graffy. As this article goes to press, a Memorial Exhibition in honor of Paul Wayland Bartlett, is announced. These men were a great loss to American sculpture when they passed away.

Daniel Chester French.—Another great loss has been met in the death of Daniel Chester French, the Dean of American Sculptors, a hard worker, whose output covers a period of fifty-five years. French saw the great struggle that was made to obtain a place for American sculpture, but he was not among the strugglers. Success came to him with his first big commission—"The Minute Man" at Concord. Things happened at that unveiling that never occurred again. President Grant and his entire Cabinet were present. Emerson, Longfellow, and Lowell were appreciative bystanders. George William Curtis held the crowd for two hours as orator of the occasion. Nor was the beginning much more auspicious than the last great achievement of French called forth. His "Seated Lincoln" in the classical memorial temple in Washington is something that will keep the name of Daniel Chester French in the minds and the hearts of the great American public.

GENERAL OBSERVATIONS

The country has been in the throes of a period of "depression" and such a period, of course, is promptly reflected in every activity so closely dependent upon material prosperity as is the profession of architecture. The past year has not produced many buildings, if the number of buildings erected in a given year may be taken as an indication of progress in the art. The lack of concrete examples upon which the Architect may lavish his skill or give play to his imagination, has however, allowed some of the members of the profession to give thought to the complicated social problems that are confronting an over-organised society. Architecture, after all, fulfills its high purpose only when it adequately fits Society's needs, and for a good many years Architects have been so very busy fitting structures to approximate, temporary notions (principally concerned with material desires of the few rather than with economic needs of the many), that they have never been able to study the society about them with sufficient care to understand what their problems were, still less to discover appropriate solutions for those problems. Ralph Walker's comment (quoted in the 1930 AMERICAN YEAR BOOK) is still so very appropriate that it bears repetition:—"The modern architect should be much more a psychologist than an engineer, for the economies to be arrived at are human and not structural." Structural "economies" are matters that textbooks and simple arithmetic can take care of adequately. Human "economies" require a careful study and an intimate knowledge of one's fellow men. The period of "depression" has allowed, for the first time in many years, the time necessary for some architects to begin to study their fellow men. And therefore, the final net result of the present lack of building activity will

be a great advance in the ability of the architectural profession to meet its obligations to society.

BUILDINGS

Radio City.—The "Radio City" scheme in New York, by Raymond Hood and Harvey Corbett and others, has, at various stages, brought forth a great deal of unfavourable comment from persons in various walks of life. At times this tremendous project has appeared to be fully as ridiculous as it has been painted. But it has been groping toward a fine ideal all the while and now seems to be well on the way to attain it. Especially is this so since Dr. Hartley Burr Alexander, who collaborated with Goodhue in the development of the symbolic scheme for the Nebraska Capitol, has been added to the group in charge of the design. It is too early to know exactly the nature of Alexander's contribution to "Radio City," but one knows that he will certainly add to that great project the thing that it might easily have lacked without him, namely, a soul.

The Chicago World's Fair group has been started. From illustrations of the buildings erected to date one cannot find anything but keen disappointment to express. But, with the names of the associated designers, and their capabilities, in mind, one can always hope for better things. The buildings so far have novelty, if that is a worth-while quality off the vaudeville stage.

Kansas City.—The great Liberty Memorial in Kansas City, by Magonigle, has received a serious setback in the abandonment—at least for the moment—of the scheme for the Great Frieze on the wall facing the Union Station. Of course Kansas City may some day wake up to the fact that the complete ideal of a great artist is of far greater, and more lasting, value to a proud city

than are all the selfish notions of all the "Social Politicians" and all the real estate promoters in the world. If Kansas City does come to a realization of that fact, it will then complete its lovely Liberty Memorial as its distinguished designer has intended it should be completed, and the city will have permanent cause for Civic Pride.

Washington.—The buildings so far erected in the "Triangle" in Washington are distinguished by a singular, and somewhat discouraging, lack of inspiration. They are the sort of building that might have been done anywhere during any mediocre period, and have nothing whatsoever of the character of the Age, or the Nation or the City, in which they are built. The drawings and models for the balance of the development show that the same uninspired mediocrity has been adopted as the type. The Department of Commerce building has, of course, the "quality" of size, if that may be called a "quality," and the materials are well handled. But there are very disquieting things that happen to the scale in spots and a great deal of very trite detail has been employed on it, and it reminds one in many ways of a certain great Prison in London. Perhaps after all, a building for a Department of Commerce should really look like a Prison. The Folger Shakespeare Library in Washington, by Paul Cret and his Associates, is nearly finished and is a delightful piece of contemporary architecture. It is the sort of thing that rather "puts to shame" the much bigger buildings whose un-inspired bulk sprawls over the "Triangle." The Supreme Court Building, which will be near this Folger Library, will suffer much in comparison with the little Library and would be far more "at home" among its kindred on the "Triangle."

EDUCATION

Architectural education, in common with all other kinds of education, is very much handicapped by the necessity—under the Democratic notion that "all men are created equal"—of glorifying mediocrity at

the expense of real talent. The effort to educate a mass of young persons in the art of architecture in a given space of time, according to a given schedule of studies, results in really very little actual education for anybody, and leaves no time for the encouragement and development of occasional genius. Massachusetts Institute of Technology will graduate its first class under the new five-year schedule in June of 1932. This adds another to the slowly growing list of schools that require at least five years for the Bachelor's degree. The judgments of the Beaux Arts Institute of Design, which Institute has notably complemented the schools for so many years, are becoming so strongly influenced by the spectacular "Modern" poison that many educators who recognise the fact that mere novelty is not a quality of lasting art, are discontinuing the use of the B. A. I. D. problems.

PUBLICATIONS

Architecture, published by Scribners and edited by Henry Saylor, is easily the most worth-while magazine in the architectural field. Its illustrations are chosen with great care and good taste and it seems to be singularly free from the influence of the powerful "Big Offices." It seems to feel also that architecture, like all the arts, is not a matter that has any concern with geography and it consistently refuses to publish mediocre buildings from "Podunk" simply to please the subscribers in that important city. Scribners' have published an interesting book on *Modern Architectural Sculpture* which illustrates enough good work to remove the sting from the word "Modern" in the title. The best work in it comes from Lee Lawrie and Paulanship in the United States and there is some interesting work from England and the Scandinavian countries. The illustrations from France are singularly disappointing and those from Germany are quite impossible. The Princeton University Press issued a most intriguing book of Lectures by Frank Lloyd

Wright, a book that is intriguing to look at, but a book that contains much dangerous drink for young artists, if taken literally as Youth ordinarily takes things. The "Popular" magazines, during the past year, have devoted a good deal of space to

articles on architecture, which is a healthy sign of a re-awakening of popular interest in the Mistress Art. The *Atlantic* and the *American Mercury* have led that field in the number and value of their articles on architecture.

MUSIC AND THE OPERA

BY CATHERINE SMITH BAILEY

MUSIC REVIEWER, *Christian Science Monitor* and *Boston Transcript*

OPERA IN NEW YORK

Metropolitan.—New York, usually the center of operatic innovation in this country, has this year lagged far behind other places. The only outstanding new presentation at the Metropolitan Opera House was that Central European piece, "Schwanda the Bagpiper," music by Weinberger, text by Milos Kares. This opera, which pretends to little and achieves much, is adroit, fresh, and vivid. The story tells of a restless piper who leaves home and wife, survives some exciting adventures and then returns. It has enjoyed a tremendous European popularity. Rossini's "William Tell," revived after a lapse of several years, was presented in the spring and repeated in November. The cast of the revival, the most important of the year, included Messrs. Lauri-Volpi, Danise, Pasero, and Ludikar, and Mme. Fleischer. The outstanding sensation at the Metropolitan was not an opera but a singer, —Lily Pons, coloratura soprano, who was discovered in a Provincial town in France by the impresario, Giovanni Zenatello and his wife Maria Gay. She arrived at an immediate and tremendous popularity. She has a remarkable voice which runs to more than two octaves and reaches the high F with apparent effortless-ness. Her voice throughout the entire range is unusually even. It has good volume and resonance, and she controls it with rare musical intelligence and with a technique considered the finest of its day. Another debutant at the Metropolitan was

Max Lorenz, a young tenor from the State Opera House at Dresden. He made a fortunate first appearance as Walther in "Die Meistersinger." He is a fine singer, in fact, a better singer than an actor.

Boccaccio.—Events of some musical importance took place in New York in the operatic field elsewhere than at the Metropolitan. Suppé's "Boccaccio" was produced at the New York Theater. Ethel Leginska was the conductor of a performance of high standard, sung in English, and with a tenor, Allen Jones, taking the leading rôle. This was the first time a tenor rather than a soprano had sung the lead.

Jack and the Beanstalk.—In November The Juillard Graduate School of Music was the scene of the first performance of "Jack and the Beanstalk," music by Gruenberg, book by Erskine. All the principals of the cast were students at the school with the exception of Paul Besumer of the Metropolitan, and students made up the chorus and the orchestra. The score proved to be symphonic rather than operatic. Settings of great beauty, contrived by Margaret Linley, were an important feature.

"The Poacher."—An interesting revival was that of Lortzing's "Der Wildschütz," called "The Poacher," by the New York Opéra-Comique at the Heckscher Theater.

"The Venetian Glass Nephew."—The Vanderbilt Theatre was the scene during February of performances of "The Venetian Glass Nephew," a "little opera" by Eugene

Bonner, based on the novel of Elinor Wylie and dramatized by Ruth Hale. It had a light, artificial, whimsical plot and was acted by young singers most of whom were former members of the American Opera Company. Among them were Louis Yaeckel, George Houston, Edgar Stehli, and Mary Silveira.

"Pagliacci" as a Sound Film.—A technical innovation came when, on Feb. 22, an entire opera was reproduced as a sound film for the first time. Leoncavallo's "Pagliacci" was presented at the Central Park Theater by Audio-Cinema and Fortune Gallo. The singers included Messrs. Bertini, Valle, Interrante, and Curci, and Mme. Alba Novella was the Nedda. The performance was not very satisfactory from a technical point of view, since each vocal and instrumental attack was accompanied by a mechanical clicking and the orchestra's tones were guttural and sepulchral in the lower ranges. "Pagliacci" was sung in Italian, which is hardly the suitable tongue for popularizing opera on the screen in this country.

PHILADELPHIA OPERA

"Wozzeck."—Philadelphia was the scene of the most important operatic innovations of the year. There, on March 19, Alban Berg's "Wozzeck," that now famous piece of modernism, was presented by the Philadelphia Opera Company under the direction of Leopold Stokowski. In this first American performance Mr. Stokowski made his début as a full-fledged opera conductor, fulfilling a long-cherished ambition. The Philadelphia Orchestra took part. There were many novel effects, since no conventional scenery was used. Instead, Robert Edmond Jones contrived stimulating arrangements of plane surfaces with radical lighting effects. There were no intermissions. The cast included Ivan Ivantsoff as Wozzeck, Anna Roselle as Marie, Gabriel Lebnoff as the drum-major, Bruno Korell as the captain, Ivan Steschenko as the doctor, and Sergei Radamsky as Andres. The patroness of this undertaking was Mary Louise

Curtis Bok, generous benefactress of music in Philadelphia. In November the same opera was repeated, and again, as in the spring, the Philadelphia forces gave one performance in New York.

"Oedipus Rex."—Another outstanding operatic achievement in Philadelphia was the performance on April 10 of Stravinsky's "Oedipus Rex," which then arrived at its first American performance in a theater. The place of presentation was the Metropolitan Opera House. Again Stokowski was the conductor and the Philadelphia Orchestra played. Robert Edmond Jones was the stage and costume designer. The Glee Club of Princeton University took part in the Philadelphia performances. When the company took this piece to New York the Harvard Glee Club sang the choral parts. The principal singers were Paul Althouse as Oedipus; Margaret Matzenauer, Jocasta; M. Rudinov, Creon; Sigurd Nillson, Tiresias; and Daniel Healy, the Shepherd. Monumental marionettes were used for the statue-like humans indicated by Stravinsky. They were carved by Remo Buffano according to sketches by Mr. Jones. In actual performance, although they moved slowly and not jerkily, they were nevertheless so fantastic that they distracted the attention of the audiences from the music. They resulted in a mechanized rather than imaginative stage. Another distracting feature of the performance was the brilliancy with which the conductor and the entire orchestra were illuminated, while chorus and individual singers sat in semi-darkness.

"Pas d'Acier."—On the same bill, Prokovieff's ballet, "Pas d'Acier" (Rhythm of Steel), was presented. The original scenario by Iakoulov had dealt with Soviet Russia, and the music was in keeping with this original setting. For this Philadelphia performance, however, a new scenario by Lee Simonson was substituted with Industrial America for inspiration. There were in consequence some absurd incongruities.

CHICAGO OPERA

"Mona Lisa."—In Chicago the Civic Opera Company presented Max Schilling's "Mona Lisa" Nov. 21. Mr. Pollak and Dr. Erhart were the directors in this performance, new to Chicago. Frida Leider as Mona Lisa, Rudolf Bockelman as Francesco, Paolo Marion as Giovanni, and Thelma Votipka as Venus took part in a creditable performance of an opera which needs to be acted rather than sung.

"Parsifal" was presented Dec. 20 after a space of ten years, in a finished and inspired performance. Egon Pollak was the director and the cast included René Maison as Parsifal; Alexander Kipnis, Gurnemanz; Frida Leider, Kundry; Hans Nissen, Amfortas; and Eduard Habich, Klingsor. All the ridiculous, unstageable "transformation" scenes were omitted and a convincingly beautiful performance resulted.

Repertory.—Into the regular repertory, the Chicago company has now put Mozart's "Magic Flute," Smetana's "Bartered Bride," Musorgsky's "Boris" (this as a vehicle for Vanni-Marcoux), and Donizetti's "Lucia di Lammermoor" (this for Claire Clari-berth).

NORTHAMPTON

In Northampton, Mass., on May 9, Handel's "Rodelinda" was given its first American performance at the Academy of Music under the direction of Werner Josten, head of the music department at Smith College. "Rodelinda" proved interesting, historically and musically, even though it is hardly an opera for repertory performance. The cast included Mabel Garrison, as Rodelinda; Janice Kraushaar, Donald Beltz, Kurtiss Brownell, Howard Laramy, and Carl Theman.

ORCHESTRAS

New York.—In New York Toscanini continues in the rôle of orchestral dictator. The same frenzied idolatry for the maestro which existed last year still makes any normal orchestral existence impossible for the

Philharmonic Symphony Society. Whatever the rank and file of the audiences may think of orchestral music in general and Toscanini in particular, those few who express themselves in print seem to believe that without Toscanini there could be neither music nor orchestra of any desirable quality. Erich Kleiber of Berlin, an able and brilliant conductor, is submitted to for the first six weeks of the autumn opening. Then comes Toscanini, with the interpretations which make all the masterpieces seem to have been written for his own particular interpretation and exhibition. The personnel of the orchestra is considerably altered following what the newspapers humorously referred to as the "examination period" when Toscanini heard his players in solitary auditions. It seems particularly regrettable that the only large orchestra in America's largest city should be so completely dominated by one personality, even though that personality be admittedly one of the greatest contemporary conductors. Inasmuch as it is impossible for Toscanini to conduct the entire season of the orchestra, the situation is peculiarly acute. During this past year the orchestra was unfortunately unable to make its spring trip into the west because the maestro had European engagements. With each passing year of Toscanini's reign, the Philharmonic Symphony Society of New York is becoming more and more a local institution. The glaring exception to this condition was the European tour of a year ago.

Boston.—The outstanding contribution of the orchestra during the current year was a magnificent Bach Festival which climaxed the observation of the fiftieth anniversary of the orchestra's founding. Works performed during this festival included two performances of Bach's Mass in B Minor (this with choruses from Harvard and Radcliffe), two Brandenburg Concertos for Orchestra, a Concerto for Piano (Alexander Brailovsky, soloist), the Magnificat, and four Cantatas in which the Bach Cantata Club of Cambridge sang. First

performances of works commissioned for the Jubilee year included Copland's "Symphonic Ode," Alexander Stienert's "Symphonic Legend," and Edward Burlingame Hill's Second Symphony. These were in continuation of the series of newly commissioned works which the orchestra had begun the previous year.

Cleveland.—The Cleveland Symphony Orchestra, Nikolai Sokolov, conductor, dedicated its new auditorium, Severance Hall, Feb. 5, when Charles Martin Loeffler's "Evocation" for orchestra, women's chorus and a speaking voice was given its first performance. Another first performance of interest came in November when Arthur Shepherd's Choreographic Suite, Four Dance Episodes on an Exotic Theme, was played.

Cincinnati.—The Cincinnati Symphony Orchestra has a new conductor in Eugene Goossens, able and experienced Englishman, who for a number of years has worked at the Eastman School of Music in Rochester.

Philadelphia.—The Philadelphia Philharmonic remains on the same high artistic level to which Leopold Stokowski has brought it. Its programs tend more and more to un-mixed period alignments. An outstanding modernist program included works by Vogel, Ferroud, Stravinsky, Golestan, San Juan, Tansman, von Webern, Mossolov and Bennett. Guest conductors with the Philharmonic include Toscanini, Molinari, Reiner and Smallens, to whom Stokowski apportions the fourteen concerts which he does not himself conduct. The summer concerts in Philadelphia, held in the Robin Hood Dell, were this year conducted by Albert Coates and Fritz Reiner.

Los Angeles.—For summer concerts in Los Angeles, held during August in the Hollywood Bowl, Pierre Monteux came from Paris, bringing with him, among other things, a Prelude to Hindemith's "Today's News" and Naboukov's Symphony.

San Francisco and St. Louis.—The San Francisco Orchestra and the St. Louis Orchestra, which have in recent seasons been heard under a

constantly changing succession of guest conductors, have now acquired permanent leaders. Issey Dobrowen has a four-year contract with the management of the San Francisco players, and Vladimir Golschmann, young and ingenious Parisian conductor, is to lead the St. Louis band for two years at least.

RECITALISTS

Tauber.—Except for Lily Pons, whose astounding and immediate success was described in the section on opera, there have been few exceptional recitalists newly before the American public this year. Richard Tauber is perhaps the most important, aside from Miss Pons. Tauber is a German tenor, not the ponderous Wagnerian type, but the lighter type of German male singer heard in Europe in Mozart's operas, in French and Italian works and in novelties. The large and exuberant audience in Town Hall, New York, on the evening of Tauber's American début, reflected his popularity on European stages, where his falsetto and his mannerisms as well as his very solid musicianship are so well known.

FESTIVALS

Cincinnati.—Cincinnati's twenty-ninth biennial May Music Festival, held in Music Hall, May 5-9, was under the direction of Eugene Goossens. The Cincinnati Symphony Orchestra, a large chorus, and an imposing list of soloists headed by Lily Pons and Dan Beddoe, shared in the music. Among the works performed were the Brahms Requiem, Mendelssohn's "Hymn of Praise," Mahler's Eighth Symphony, Bach's "Phoebus and Pan," Pierné's "Children's Crusade," Delius's "Sea Drift," and Honegger's "King David."

Rochester.—The Eastman School of Music in Rochester, N. Y., celebrated its annual festival, May 19-22. First performances of "Sahdjii," a choral ballet with music by William Grant Still and a scenario by Richard Bruce and Alain Locke, and of "The Marriage of Ande," an opera with

music by Bernard Rogers and book by Charles Rodde, were given.

RECORDS

On Sept. 18 an invited group at the Savoy Plaza Hotel in New York City heard the latest achievements of the R.C.A.-Victor technicians, the production of a new long-playing type of record. These new records are made of a substance called "Victrolac," are virtually unbreakable, have grooves finer and closer together than were those on the old records, and produce less surface noise. A new-type record plays thirty minutes. To accommodate these discs a new speed

of rotation is employed: thirty-three and a third revolutions per minute as against the old speed of seventy-eight. There are also new chromium-plated needles, one type for "program transcriptions," which is the official name for the new long-playing records, the other for the older type. The first "program transcription" made was Beethoven's Fifth Symphony by the Philadelphia Symphony Orchestra under Stokowski; formerly on four records, the symphony is now recorded on a single record. Other transcriptions have been made by replaying old-type records on to the new ones.

THE THEATRE

By J. BROOKS ATKINSON

DRAMATIC CRITIC, *The New York Times*

THE THEATRE AND THE DEPRESSION

During the industrial depression the business of the theatre has been critically bad. For several years nearly everyone has realized that the number of theatres used for legitimate drama is two or three times larger than profitable business warrants, and the costs of producing plays is ruinously high. The movies have injured the drama chiefly by draining the theatre of its workers and by bidding up prices for actors, directors and authors, and in order to hold its own the theatre has to pay exorbitant prices for the services it requires. In 1931 the theatre began to pay heavily for its past follies. In New York only a third of the theatres are in use. Actors are out of employment in greater numbers than ever before. The Shuberts have gone into receivership, and A. H. Woods has gone into bankruptcy. Since a good play is always profitable, there are many bright spots along the Broadway horizon. Although playgoers are choosing more carefully than in the past, they still go in large numbers to the plays they want to see. Meanwhile, the theatre as a

whole is passing through a phase of crucial readjustment. Within a year or two it is likely that the theatre as an industry will be very much smaller, and possibly more intelligent, than it has been for ten or fifteen years.

EUGENE O'NEILL

Although failures have been more common and disastrous than is usual, there has been no lack of interesting plays, particularly by authors already familiar to the public. After a year of silence Eugene O'Neill has returned to the theatre with a long trilogy, "Mourning Becomes Electra," which is commonly considered his masterpiece and frequently referred to as the greatest play in the American drama. "Mourning Becomes Electra" is a dramatization of the old Orestes-Electra legend of Greek drama in terms of modern psychology. The New England house of Mannon of Civil War time represents in most of its relationships and violence the House of Atreus of the Trojan War period. Further than that the comparison hardly holds, for Mr. O'Neill has written a biting, malevolent psychological melodrama

that is as long as "Strange Interlude," but more deliberately written. In staging it the Theatre Guild has gathered a memorable cast. Alice Brady and Alla Nazimova in the chief parts and Earle Larimore in the part of next importance, give performances quite as fiercely beautiful as the play. Quite apart from its length "Mourning Becomes Electra" is the biggest drama in the contemporary theatre, a theatrical, purposeful and clearly articulated play. There is light as well as heat in Mr. O'Neill's workmanship.

PLAYS AND PLAYERS

Katharine Cornell.—After squandering her genius on several trivial plays Katharine Cornell has found a worthy vehicle for it in Rudolph Besier's "The Barretts of Wimpole Street," which opened in February and is still in high favor at the close of the year. It is the story of Elizabeth Barrett and Robert Browning, a glamorous romance with a frightening suggestion of abnormality in the covetous attitude her father has for her. In England the play has been quite as successful as it has been here. Miss Cornell's enkindling acting as the invalid, Elizabeth Barrett is a thing of great beauty, and Brian Aherne's Robert Browning, dynamic and impetuous, has a splendor of its own. After the death of David Belasco on May 14, Miss Cornell and her husband, Guthrie McClintic, took possession of the Belasco Theatre, where they plan to produce plays, either with or without Miss Cornell. It promises to be one of the few enlightened producing organizations in the American Theatre.

Elmer Rice.—Although "Mourning Becomes Electra" and "The Barretts of Wimpole Street" are the finest stuff the year has offered, there have been several other good productions. Elmer Rice, who wrote "Street Scene," has brought two of his own plays successfully to the stage,—*"The Left Bank"* and *"Counsellor-at-Law."* In *"The Left Bank"* Mr. Rice has discussed the problems of young

American expatriates living in Paris. He has written dialogue of uncanny truthfulness and done all his own thinking. *"Counsellor-at-Law"* is the drama of a New York attorney's office. Like *"Street Scene"* it illuminates a section of urban life. In *"The Left Bank"* Katherine Alexander, Horace Braham and Donald MacDonald give performances of great integrity; and in *"Counsellor-at-Law"* Paul Muni acts with remarkable understanding of character.

"Tomorrow and Tomorrow."—Philip Barry's *"Tomorrow and Tomorrow,"* which had a good run in the spring, was suggested by the Bible story of Elisha and the Shunemite. It was the drama of a young wife, in the Middle West, who fell in love with a visiting lecturer and had a son by him. After the lecturer had gone away, the son was dangerously injured by a fall on horseback, and he hovered closely on the brink of death until the lecturer, who was a distinguished physician, cured him. In its bare outline the story hardly suggests the tenuous loveliness Mr. Barry imparted to it. With Zita Johann as the wife and Herbert Marshall as the lecturer and Osgood Perkins as a laconical secretary, the play had a good deal of beauty on the stage.

"Brief Moment."—S. N. Behrman's *"Brief Moment"* retains the daintiness of dialogue and perception that characterize his work, and the insecurity of story. He is discussing a wealthy and futile young man who marries a night club singer because she has the assertiveness about life that he lacks. It is a light, gay piece of writing, and it presents Alexander Woollcott, critic and flaneur, in a congenial role as a garrulous man of the world. Mr. Woollcott's plump performing is amusing; Francine Larrimore's acting of the night club singer and Robert Douglas's portrait of the young man are splendid pieces of acting that preserve the thoughtful charm of Mr. Behrman's writing.

"Reunion in Vienna."—In *"Reunion in Vienna,"* which was staged

by the Theatre Guild, Robert Sherwood, who wrote "The Road to Rome," is writing in his most outrageously humorous vein. It is the story of an impetuous Hapsburg prince who purses his former mistress straight into the house of scientific enlightenment where she is living with her psychoanalytical husband. Mr. Sherwood has written in the spirit of pure comedy, and Lynn Fontanne and Alfred Lunt play the chief parts with a gusto and meriment rarely found upon our stages. Their brilliant playing makes "Reunion in Vienna" as much theirs as it is Mr. Sherwood's.

"Green Grow the Lilacs."—Lynn Riggs, whose "Roadside" had been put on in the preceding autumn, had a second play mounted by the Theatre Guild in January, "Green Grow the Lilacs." It was a hale and hearty narrative of loves, jamborees and neighborly skirmishes in Indian Territory in 1900, and a most refreshing contribution to the season.

"As Husbands Go."—Rachel Crothers was at her best in a workmanlike comedy entitled "As Husbands Go," which was produced in the early spring. This tale of a Dubuque matron who thought that she had found her true love in Paris and meant to divorce her husband on that account was comedy in a sound theatrical vein.

"The House Beautiful."—Channing Pollock's "The House Beautiful," praised the good with a good deal of conviction. It was the story of obscure people who, by keeping the faith, achieved a beauty of living in what Mr. Pollock considers a vulgar age. Mr. Pollock's philosophical pronouncements are rather tedious but he knows how to write of familiar things in a workable stage fashion.

"Philip Goes Forth."—George Kelly emerged from silence in January to write a play about incipient young artists who ought to be earning their living in trade. "Philip Goes Forth" was the title. Although it had streaks of the sort of dramatic facility that distinguish Mr. Kelly's work it was an ambiguously moti-

vated play with a distastefully superior point of view.

"Precedent."—During the spring a play about the Mooney-Billings *cause célèbre* appeared at the Provincetown playhouse. It was entitled "Precedent"; it was written by I. J. Golden, a lawyer familiar with the details of the case. Acted with a good deal of earnestness and written with some competence it struggled along in New York all through the summer.

THE GROUP THEATRE

Although Paul Green won the Pulitzer Prize in 1927 with "In Abraham's Bosom," he was not again represented in the New York theatre until a new organization, entitled the Group Theatre, mounted his "The House of Connelly" in September. It was a prose poem of the old South yielding to the new, written with all the swing and exultation and pensiveness that Mr. Green brings to a play about his own locality. Nothing about the play, however, was more exhilarating than the appearance of an aspiring band of young actors who, under the name of The Group Theatre, hope to establish a permanent acting company in New York to produce plays of all sorts by authors of congenial temperaments. In December they produced their second play, an artless drama of unemployment by Paul and Claire Sifton, entitled "1931—." As a play it was cumbersome in the organization of story and astringent in the dialogue and generally inconclusive, which made it depressing rather than provocative, but the theme was terrifyingly concrete. With "The House of Connelly" the Group Theatre succeeded moderately at the box office; with "1931—" they failed. But artistically they have established themselves as the most genuine and promising group that has come into the theatre for several years.

IMPORTED PLAYS

"Private Lives."—With the exception of "The Barretts of Wim-

pole Street" all the preceding dramas are the work of American writers. As usual, American producers imported many excellent pieces from England and the Continent. Noel Coward's artificial comedy, "Private Lives," was the most skillful and the gayest of the lot. It was the story of two married couples, the wife in one couple having recently been married to the husband in the other. When they met at a Riviera hotel during their respective second honeymoons they discovered that they should never have been divorced in the first place, and they impulsively reunited, leaving their new spouses with no explanations whatsoever. But the plot of so light and thin a piece hardly matters. What matters is the sheer skill of the workmanship and the skimming insincerity of the acting. For three months the leading parts were played by Noel Coward and Gertrude Lawrence. Then Otto Kruger and Madge Kennedy played them, still preserving the merriment of the antic.

Other Comedies.—Excepting "Springtime For Henry," an artificial comedy by Benn W. Levy, in which Leslie Banks and Nigel Bruce appeared in December, the year yielded nothing livelier in civilized mischief than "Private Lives." Somerset Maugham's "The Breadwinner," which brought the insouciant A. E. Matthews back to America, was so contemptuously written that it yielded very little amusement.

"Payment Deferred."—By virtue of Charles Laughton's brilliant character acting, Jeffrey Dale's murder play, "Payment Deferred," had a good deal of artistic richness. The story ingeniously showed how a man who had escaped detection as a murderer was, ironically enough, convicted ultimately of a murder that he had not committed. As the murderer in question Mr. Laughton gave an astonishingly versatile study of a loathsome character, gross and treacherous, whinnying and pathetic.

Milne and Galsworthy.—A. A. Milne was represented in the spring

by a play entitled "Give Me Yesterday," which had been known as "Success" when it was put on in London. Mr. Milne was studying the character of a successful man of affairs whose capacity for getting on in the world had corrupted the fine qualities he had had as a youth. In the telling Mr. Milne dodged the hard points in his story by slumping off into fantasy at the crucial moments, which is a weakness that subtly destroys the fine points in all of Mr. Milne's recent plays. John Galsworthy's only play of the year was an American production of "The Roof," put on by Charles Hopkins after considerable difficulties. It was the story of a hotel fire and it sought to show how bravely people of all kinds responded to such an emergency. Although an able cast of actors gave the play a good deal of interest, Mr. Galsworthy's play was hardly more than the outline of a play, and left his audiences with a feeling of incompleteness at the end.

Molnar.—Molnar's annual frolic is a piece entitled "The Good Fairy" with Helen Hayes in the leading part and Walter Connolly in the part of next importance. It is a light and slightly wrinkled improvisation, unfinished with a kind of deliberate audacity. But Miss Hayes is a spinner of enchantments. For her sake theatregoers are willing to forgive Molnar his many sins.

"Cynara."—In "Cynara" two British authors, H. M. Harwood and R. F. Gore-Browne, tell the story of an extramarital romance that concludes in tragedy. Although it is an attachment without guile on the part of either the man or the woman it ruins the lives of both. The authors have told the sordid story with considerable reticence and forbearance, and Philip Merivale and Adrienne Allen give it an unassuming exaltation in the acting.

"Miracle at Verdun."—Although much was expected of Hans Chlumberg's "Miracle at Verdun," the Theatre Guild's over-extended production quite destroyed whatever

lingering virtue there may have been in the play. Chlumberg had written a gruesome fable about the return of the soldiers who had died in the war to a world that has gone muddling on without them. Between what they expect to find and what they do find lies the tragedy of the theme. The play was written with a baffling transition of moods that made a director's task ungrateful. In attempting to gild the lily with talking picture accompaniments and bravura stage devices the Theatre Guild muddled the play beyond endurance.

Bernstein and Pirandello.—In the spring, the French Henri Bernstein was represented by a translation of a drama entitled "Melo." It was the triangular plot again, but told with such theatrical skill and acted so well by Edna Best, Basil Rathbone and Earle Larimore that it had considerable force in the theatre. Pirandello was still playing sleight-of-hand tricks on reality in a play entitled "As You Desire Me," with Judith Anderson in the leading role. What he tried to suggest, in a play based on an actual case, was that one woman may become another woman if the other woman's husband, relatives and friend believe that she is theirs. It is a difficult question to state in the theatre, and it is rendered more difficult when two or three people take a hand in fashioning the script. This was not one of Pirandello's good plays.

REVIVALS

Maude Adams.—Of the many revivals, Maude Adams's "Merchant of Venice," with Otis Skinner as Shylock, is the most popular. After thirteen years of retirement the little lady of the Barrie plays has returned to the stage as Portia. Although she did not visit New York during the autumn season and had made no plans for including New York in her itinerary, she and her company trouped rapidly around the East all autumn and were headed for the South at the close of the year.

"Camille."—During the winter Eva LeGallienne revived "Camille" at the Civic Repertory Theatre, playing the leading part herself and giving one of her finest performances. Being exhausted by five years of hard work at the Civic Repertory she closed the house and disbanded the company at the end of the spring season, and went abroad for a year's vacation.

Others.—Among the other revivals were Ethel Barrymore in "The School for Scandal"; Raymond Massey in Norman Bel Geddes's production of "Hamlet"; Walter Hampden in "The Admirable Crichton"; Robert Loraine in Strindberg's "The Father"; Joseph Schildkraut in Schnitzler's "The Affairs of Anatol"; Dennis King in "Peter Ibbetson"; a Theatre Guild Revival of Shaw's "Getting Married"; and The Players Club revival of Congreve's "The Way of the World."

MUSICAL SHOWS

It was a disastrous year for musical shows. Many of them were not sufficiently fresh in their entertainment and music to justify the immense costs of producing and operating. In June George S. Kaufman, Howard Dietz and Arthur Schwartz produced a thoroughly modern revue entitled "The Band Wagon." Without being original in any particular vein it was smart and brilliant in the freshest genre of the stage, and it became immediately popular as a fresh pattern of music hall entertainment. At the close of the year Mr. Kaufman, Morrie Ryskind and George Gershwin were represented by an uproarious political satire, entitled "Of Thee I Sing," which was quite as civilized as "The Band Wagon." In October Jerome Kern wrote the score and Otto Harbach wrote the libretto of a melodic romance entitled "The Cat and the Fiddle," which was soon in great favor for its musical beauty. Florenz Ziegfeld's "Follies," George White's "Scandals" and Earl Carroll's "Vanities" all appeared in good season and entertained their special publics with the sort of music hall wares that have long been in favor.

XXVI. THE ARTS

MOTION PICTURES

BY MORDAUNT HALL

MOTION PICTURE CRITIC, *The New York Times*

TECHNICAL PROGRESS IN AUDIBLE FILMS

Production Efficiency.—Considering the inauspicious start talking pictures had in 1928 and 1929, when the majority of producers had little faith in them and presumed that the vocalizing of the screen would be but an ephemeral fancy, it is interesting to record the technical efficiency of this form of entertainment nowadays and also to note that only two silent films, or rather voiceless films, for the producers of both took advantage of the sound angle, were presented in the heart of New York city in 1931. Moreover, not only did Hollywood studios concentrate on audible films, but in those of Germany, France and Britain, and even in Russia, it was reported recently, sound was the order of the day. More pictures were presented in the Broadway area than ever before; the number in 1930 was 390 and in 1931, 423. Although there were only 33 more than in the previous year, there was a greater proportion of worthy works than in 1930. So far as the so-called Best Ten are concerned they cannot be said to be superior to those of the preceding twelvemonth, but other productions deserving of mention were more numerous. On the whole the voices were better recorded and the photography, which suffered in the early days of talking films because the microphone exacted too much attention, was infinitely superior to the 1930 screen works.

Audibility in "Explorers of the World."—One of the instances of great value of audibility was in a production called "Explorers of the World," in which the exploits of six explorers were featured, each one delivering, after the introduction of his shadow, a running comment and description of the scenes thrown on the screen. This resulted in a most interesting entertainment and one that

was highly informative, something that never could have been done with the old voiceless pictures, for it should be remembered that even the inadequate text delivered with a compilation of scenes embraced about one-fifth of the footage of film.

Douglas Fairbanks made a tour of the world, taking with him a motion picture director and a cameraman. The photographic record of the Fairbanks globe-girdling adventures was turned into an interesting film, which bore the title of "Around the World in Eighty Minutes With Douglas Fairbanks." This feature proved to be extremely popular and like the "Explorers of the World," it was accompanied by a lecture. Mr. Fairbanks gave the lecture and all vocal and sound effects were put into the feature in Hollywood. So, as in "Explorers of the World," a tiger was photographed by a telephoto lens in the Indian jungle and another tiger in California supplied the roar for the microphone.

MUTE FILMS

"City Lights."—The two mute films were Charles Chaplin's comedy, "City Lights," in which, in justice to sound, it should be stated that the most laughable stretch was helped along by the microphone, and the late F. W. Murnau's Polynesian film, "Tabu," which was an unusually artistic production, a veritable poem in shadows. As for "City Lights" it probably netted its producer more than any other production he has made. Furthermore, according to authoritative reports, it brought in more money than any other film has ever done. One reason for this was that the public, not only here, but in many other lands, was hungry for a Chaplin comedy. Another reason was that it was without voices and, therefore, could be understood as well in Prague as in New York. While it

was nothing but hokum and slapstick, it was developed in such clever fashion by the comedian that it made both the erudite and the illiterate laugh, one as loudly as the other. It had some neatly conceived pathos and some buffoonery which was always handled in the Chaplinesque fashion.

PRODUCTION PROBLEMS

Decrease in Audiences.—Owing to financial conditions, audiences fell off greatly and some producers are inclined to think that they were making film stories that were too sophisticated for the vast majority of their audiences, while others, like Mary Pickford, declared that the children had stopped going to the motion picture theatres since the vogue for vocal films. As a matter of fact the producers probably would have found themselves in the same plight had they continued with silent productions, for inevitably they would have had to make improved offerings. Just as books and plays have their following, so cinema works now have theirs. Miss Pickford is quite right when she esteems that some pictures are above the heads of children. It is certain, for instance, that while a child might laugh at the hectic action in the film version of Noel Coward's play, "Private Lives," the witty lines would not be understood. At the same time it should be borne in mind that in the days of silent films there were a vast majority of none-too-pleasant sex productions, which after all were as dull to a child as any sophisticated offering with speech.

Meeting a Higher Public Standard.—As for the idea, in which some film makers believe, that there ought to be more hokum and less sophistication, the producers are confronted with their own Monster, for in giving speech to films they have, as George Arliss predicted in the early days, educated the public to the appreciation of something better, and while there is a certain type of rough

and ready sentiment and humor, which might be termed sure of financial success, a few such entertainments are likely to go a long way. It is an old saying in film circles that New York is no criterion of the financial success of a picture, that what goes well in a big city may be a failure in Main Street. There may be some truth in this statement, but more often than not the failure of an intelligent production is due to the manner in which it is exploited. So far as cinema audiences are concerned it is quite true that they, for the most part, seek vicarious experience and for that reason it is seldom that a film without romantic juveniles attracts the crowds. Even so these same spectators are likely to forget their inherent desires if the story is so well told that it becomes absorbing.

BLUE RIBBON FILM LIST

"Guardman" and "Private Lives".—In listing, as is the custom, the blue ribbon ten of 1931, it should be emphasized that the film of Molnar's comedy, "The Guardsman," a witty but implausible piece that was beautifully acted by Alfred Lunt and Lynn Fontanne, was the outstanding achievement, yet it may not interest all Main Streets. The same comment might apply to "Private Lives," which boasted of Mr. Coward's rapier-like humor.

"Arrowsmith".—Sinclair Lewis, the Nobel prize winner, himself praised the film of his novel, "Arrowsmith." It is done in good taste and with very definite characterizations, which, while they may differ from the conception of the reader of the story, as is the case in many adapted film depictions, soon become so convincing that they probably make a more lasting impression on the average spectator than do the mental visualization of the characters gained from the book. It was a production made without any catering to box-office appeal, yet when it was on exhibition in a Broadway

theatre it was highly successful in attracting the crowds.

"Smiling Lieutenant".—With wit of the Parisian order, there was Ernst Lubitsch's picture, "The Smiling Lieutenant," in which Maurice Chevalier was the stellar performer. Like most of Herr Lubitsch's works, this production was of high order, even though it had risqué scenes here and there. But all the sequences possessed that clever touch which this German habitually gives to his productions.

"Tabu".—Herr Murnau's film record of a South Seas legend—"Tabu"—which was mentioned in an early paragraph of this article, is another of those that may not bring crowds to the box office, but it will probably please all who see it. Herr Murnau spent more than 18 months making the scenes, and he was eager to view its reception in New York. This he was not spared to do, however, for on the eve of his departure from Los Angeles for New York he met death in an automobile accident. Herr Murnau will be remembered as the director who made that unforgettable Jannings film, "The Last Laugh," and one called "Faust," also with Herr Jannings.

"Bad Girl".—One of the most human pictorial offerings was "Bad Girl," in which a young player named James Dunn attracted wide attention.

"Frankenstein".—James Whale, the director of the play and the film of "Journey's End," turned out a really remarkable conception of Mary Shelley's weird novel, "Frankenstein." Being uncertain what could be done with any other actor but Colin Clive in the role of Frankenstein, Mr. Whale won the permission of Carl Laemmle, president of Universal, to bring the British actor from London. Hence Mr. Clive travelled something like 13,000 miles to play a single role. After viewing his performance one was impelled to think that it was well worth while.

"Connecticut Yankee".—Mark

Twain's classic story, "A Connecticut

Yankee at the Court of King Arthur," which was done as a silent picture twelve years ago, took a place among the best ten as a talking film. It was a bright piece of work, although it may not have made the impression that the mute version did chiefly because the old production was ahead of its day in the matter of imaginative humor. But this new conception of the Mark Twain book was always hilarious, with a performance by Will Rogers that was as though he had stepped from the covers.

"Skippy".—And in this group there was also that estimable boy story, "Skippy," which was inspired by Percy Crosby's comic drawings. It was most appealing, particularly the dialogue supplied by Don Marquis.

George Arliss was beheld in two widely different pictures, one called "The Millionaire" and the other "Alexander Hamilton." It is said that the former, in which Arliss impersonates an ailing millionaire who runs a gasoline filling station, was more successful in a pecuniary way than his old films, "Disraeli" and "Old English." He gave a pleasing character study in "Alexander Hamilton," in which there were excellent atmospheric effects, something that gave one a splendid notion of the olden days.

Other Successes.—The first well acted gangster film, "Little Caesar," done in the modern manner, with Edward G. Robinson in the title role was a terse, emphatic and engrossing production. Of the same stripe was "The Public Enemy," wherein James Cagney won no little distinction. Mr. Robinson had another meaty success in "Five Star Final," which dealt with the scandal-mongering of a tabloid paper. A stirring screen offering out of Edna Ferber's book "Cimarron," attracted its share of cinema-goers.

FOREIGN PICTURE OFFERINGS

René Clair, who last year contributed from France "Sous Les Toits

de Paris," sent over in 1931 "Le Million," which was far and away the cleverer of the two productions. It was a musical farce abounding in satire, travesty and bright humor. It was the only worth-while production from Paris.

Emil Jannings, who was last beheld in "The Blue Angel," was seen to advantage in "Der Grosse Tenor," a film with a somewhat old plot, but which was so pleasingly acted and well directed that it was always interesting. It had its full share of subtleties and charm. Another German production, "Burschenlied aus Heidelberg," was a credit to the Teutons, for it had beauty, melody and talent.

"Dreyfus Case".—No account of the foreign films would be complete without a mention of "The Dreyfus Case," which was a most impressive reproduction of the high-lights in this *cause célèbre*. Not only were the lines for the various players carefully selected and written, but the make-up of some of the individuals was excellent. Cedric Hardwicke, a distinguished British actor, played Dreyfus so effectively that one felt the pain and injustice the hapless prisoner suffered. It was a screen work that was infinitely more moving through its truth than most ordinary fictionesque contributions.

WIDE-FILM OUTLOOK

The wide-film ideas were pigeon-holed, for the producers did not wish to risk a financial loss through tackling something that required new screens and new mechanical appliances. The chances are, therefore, that nothing further will be heard from the wide film until better financial conditions prevail, or, at least, until some enterprising producer sees fit to make a production that will attract unusual attention. The wide film needs a director like Herr Lubitsch to impress with its value and then this director has to have a good story. Besides, it has been discovered that the wide film requires a

great deal more lighting than the standard pictures and thus there is difficulty in regulating the reproduction of voices.

ECONOMIC FACTORS IN FILM PRODUCTION

Extravagant Salaries.—The economic crisis naturally had its effect on Hollywood, where producers have been too lavish in expenditures, especially in the matter of salaries. The result was that the bankers descended upon the studios and demanded a curtailment of all outgoing moneys. In vain did the film makers argue that no player is overpaid so long as the pictures in which the player appears make a profit and that on the other hand, any player is overpaid whose production does not meet with financial success. No little discussion on costs was aroused by the publicized statement that one actress received in a contract while working on two pictures \$30,000 a week and P. G. Wodehouse, the English writer, went to Hollywood at a salary of \$2,000 a week and declared that he had drawn his salary, reported at the studio, but had done no work for his \$104,000 for 52 weeks.

Attitude of Bankers.—It was no wonder, therefore, that the bankers turned a deaf ear to many of the requests from producers. They were in a quandary, however, over the question of whether the tightening of the purse strings would not decrease the earning power of the studios. This, at the end of 1931, remained to be seen, as many of the contracts still had to be honored. In certain instances where the financial agents decided that employes were not doing enough work for their salaries they either made a substantial cut or risked legal action by discharging them. It was evident in December that the bankers would be in control and that their representatives were learning enough about motion picture production to appreciate where outlays were unreasonable.

MUSEUMS OF SCIENCE AND INDUSTRY

BY CHARLES R. RICHARDS

VICE-PRESIDENT, NEW YORK MUSEUM OF SCIENCE AND INDUSTRY

GENERAL

It would seem clear that in the near future there will be three major museums ministering to public education in the great cities of the country; *viz.*, the museum of art, the museum of natural history, and the museum of science and industry. Two of these have long since found their place in community life, and the third is rapidly gaining recognition as an indispensable unit in a rounded program. The function of all these museums is to bring about a better understanding of the world by presenting in realistic and orderly fashion selected examples of natural and social phenomena. They aim not at the instruction of a special class, but at the education of the general public; they are broadly cultural institutions that purpose to supplement the work of schools and colleges through the systematic and effective exposition of carefully selected material in fields of human interest in a manner impossible except through specialized and highly organized institutions.

SPECIAL FUNCTION OF THE MUSEUM

The special function of the museum of science and industry is to set forth the significant steps in the evolution of industry and to make clear the basic scientific principles involved, that is, the museum aims to bring about a clearer comprehension of the industrial foundation upon which our present-day civilization rests. The processes of production are hidden in the highly complicated western world, but in a primitive community they are revealed to every passerby. In the Far East, particularly in India, we find the industries supplying the daily needs of the people carried on where all may see. In the open booths of the bazaar are to be seen the brass and copper metal workers shaping

pots and pans, the tailor working on his garments, the jeweler and silversmith at his tiny forge. Nothing is hidden from common observation. In the West all this is different. The processes of production that underlie civilization are hidden behind factory walls where only the specialized worker enters. Little is known about these operations by the growing boy and girl. To attempt to present these things through books is unsatisfactory and tame. The processes must be revealed to the eye and set forth in the simplest and clearest fashion if the foundations of present-day life are to be understood and become an element in the culture of today. The industrial museum in its highest development endeavors to accomplish this purpose by displays of material that clearly and succinctly illustrate industrial processes in ways that may be readily understood by both young and old. The collections of such museums naturally are based first of all on the fundamentals upon which material civilization rests, that is, the methods by which food, clothing, and shelter have been obtained and transportation and communication developed. The modern era ushered in by the industrial revolution of the eighteenth century has witnessed remarkable extension of scientific knowledge through the application of which industrial progress has been greatly accelerated. Extraordinary developments have taken place in the efficiency of prime movers, in the manufacture of steel, in specialized automatic machines, in land and sea transportation, in chemical industries, in manifold applications of electricity, and, most recently of all, in the art of aeronautics. Thus the world of industry has changed from a craftsman's world to a factory world. Man, instead of being himself a motor, has become more and more the controller and director of energy.

MUSEUMS OF SCIENCE AND INDUSTRY

EDUCATIONAL PROGRAM

Exhibits.—It is generally true that a comprehension of modern highly developed processes and apparatus can be gained best by displays that first set forth the primitive method, or at least the simplest embodiment of an idea, followed by the important progressive steps in their historic order. In addition to such a presentation through full-sized specimens or models, every resource of descriptive labels, diagrams, plans, colored representations, and statistics is utilized to bring out the fundamental ideas involved with the maximum of clearness.

Lectures and Pictures.—The industrial museum makes further provisions to forward its educational program. First among these are arrangements for the explanation and illustration of the exhibits by trained custodians. In addition, a lecture theatre equipped with projection apparatus for still, motion, and sound pictures is provided, and frequent public lectures given at stated times, dealing not only with various aspects of industrial development, but with industrial topics of special contemporary interest, with new inventions and scientific discoveries. Provision is also made for temporary exhibitions of material relating to industrial or technical subjects brought specially into prominence by events of the day.

ESTABLISHED AND PROJECTED MUSEUMS

Europe.—In Europe there are four great museums of science and industry. In the order of their establishment they are the Conservatoire des Arts et Métiers in Paris, the Science Museum in London, the Deutsches Museum in Munich, and the Technisches Museum in Vienna. Each of these is a huge educational institution visited daily by large numbers of young people and adults. The attendance at the Munich museum is a million a year, greater than that of any art museum in the world. America has lagged behind Europe in establishing this kind of museum,

but is now gradually recognizing its great educational importance.

Chicago.—Julius Rosenwald a few years ago donated \$3,000,000 toward the establishment of a museum of science and industry. As a result of this gift, the city turned over the old Fine Arts Building in Jackson Park for this purpose and arranged for its entire reconstruction at a cost of \$5,000,000 to be defrayed by a bond issue. It is expected that the city will contribute substantially to the maintenance of the museum when opened. A collection which will ultimately be worth at least \$30,000,000, it is estimated, will be housed in some 350,000 square feet of display space in this structure.

Philadelphia.—The famous Franklin Institute is developing a memorial to Benjamin Franklin and a museum of science and industry to be known as the Franklin Institute Museum. The City has granted a splendid building site on the new Parkway estimated at a value of \$4,000,000. Supporting subscriptions of \$5,100,000 have already been pledged largely by citizens. It is planned to expend at the present time \$3,500,000 on the initial portion of a building to be devoted to the memorial to Franklin, a museum of the graphic arts, a museum of electrical communication, a library, and about 200,000 square feet to other museum displays.

New York.—The Association for the Establishment and Maintenance for the People of the City of New York of Museums of the Peaceful Arts, formed in 1914 but interrupted in its work by the World War, undertook the organization of an industrial museum about six years ago. The late Henry R. Towne in 1924 left a conditional residuary bequest of about \$2,500,000 to this Association. The Association took temporary quarters in the Scientific American Building in 1927 and began the assembling of exhibits. In the summer of 1930 the museum moved to larger quarters at 220 East 42nd Street, where exhibits have been in-

stalled for the purpose of demonstrating to the New York public the part a museum of science and industry should play in the educational program of America's largest city. The name has been changed to New York Museum of Science and Industry. The exhibits are arranged in the following divisions: Food Industries, Clothing, Shelter, Highway, Railroad and Marine Transportation,

Aviation, Communication, Machine Tools, Power, and Electrical Science and Technology. At the beginning of 1932 the weekly attendance at the museum averaged about 4,000. It is the hope of the trustees that the demonstration effected in the present limited space will result in contributions permitting the erection of a building adequate for the purposes of the museum.

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

(For further information, the reader may address the following organizations)

GENERAL

AMERICAN ACADEMY IN ROME, 101 Park Ave., New York City.
 AMERICAN ACADEMY OF ARTS AND LETTERS, 633 West 155th St., New York City.
 AMERICAN CERAMIC SOCIETY, Lord Hall, Ohio State University, Columbus, O.
 AMERICAN FEDERATION OF ARTS, The Barr Bldg., Farragut Sq., Washington, D. C.
 AMERICAN FINE ARTS SOCIETY, 215 W. 57th St., New York City.
 AMERICAN INSTITUTE OF ARCHITECTS, 101 Park Ave., New York City.
 AMERICAN NUMISMATIC SOCIETY, 156th St. and Broadway, New York City.
 AMERICAN SCENIC AND HISTORIC PRESERVATION SOCIETY, 154 Nassau St., New York City.
 AMERICAN WATER COLOR SOCIETY, 215 W. 57th St., New York City.
 ARCHAEOLOGICAL INSTITUTE OF AMERICA, New York University, University Heights, New York City.
 ARCHITECTURAL LEAGUE OF NEW YORK, 115 E. 40th St., New York City.
 ART ALLIANCE OF AMERICA, 65 E. 56th St., New York City.
 ART CENTER, INC., 65 E. 56th St., New York City.
 ARTISTS GUILD, 420 Lexington Ave., New York City.
 FINE ARTS OF FEDERATION OF NEW YORK, 215 W. 57th St., New York City.

GRAPHIC ARTS BOARD OF TRADE, 293 Broadway, New York City.
 GUILD OF FREE LANCE ARTISTS, 420 Lexington Ave., New York City.
 HISPANIC SOCIETY OF AMERICA (THE), 156th St., West of Broadway, New York City.
 MUNICIPAL ART SOCIETY OF NEW YORK, 119 E. 19th St., New York City.
 NATIONAL ACADEMY OF DESIGN, 175 W. 109th St., New York City.
 NATIONAL ASSN. OF WOMEN PAINTERS AND SCULPTORS, 17 E. 62nd St., New York City.
 NATIONAL INSTITUTE OF ARTS AND LETTERS, 633 W. 155th St., New York City.
 NATIONAL SCULPTURE SOCIETY, 115 E. 40th St., New York City.
 NEW YORK SOCIETY OF ARCHITECTS, 25 W. 39th St., New York City.
 NEW YORK SOCIETY OF CRAFTSMEN, 65 E. 56th St., New York City.
 SOCIETY OF ARTS AND CRAFTS, 721 Madison Ave., New York City.
 SOCIETY OF BEAUX ARTS ARCHITECTS, 126 E. 75th St., New York City.
 SOCIETY OF ILLUSTRATORS, Art Center Bldg., New York City.
 SOCIETY OF INDEPENDENT ARTISTS INC., 1947 Broadway, New York City.

DRAMA

ACTORS FIDELITY LEAGUE, 11 E. 45th St., New York City.
 ACTORS INTERNATIONAL ASSN., 701 Seventh Ave., New York City.

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

AMERICAN DRAMATISTS, 2 E. 23rd St.,
New York City.

AMERICAN DRAMATISTS AND COMPOSERS SOCIETY, 2 E. 23rd St., New York City.

DRAMA LEAGUE OF AMERICA, 59 E. Van Buren St., Chicago, Ill.

ENGLISH FOLK DANCE SOCIETY, 159 E. 33rd St., New York City.

EPISCOPAL ACTORS GUILD, 1 E. 29th St., New York City.

INTERNATIONAL THEATRICAL ASSN., 1540 Broadway, New York City.

MOTION PICTURE DIRECTORS ASSN., 234 W. 55th St., New York City.

MOTION PICTURE PRODUCERS AND DISTRIBUTORS OF AMERICA, INC., 469 Fifth Ave., New York City.

NATIONAL ASSN. OF THE MOTION PICTURE INDUSTRY, Times Bldg., New York City.

NATIONAL BOARD OF REVIEW OF MOTION PICTURES, 70 Fifth Ave., New York City.

PHOTOPLAY LEAGUE OF AMERICA, 221 W. 57th St., New York City.

THEATRE GUILD, INC., 243 W. 52nd St., New York City.

MUSIC

AMERICAN GUILD OF ORGANISTS, 217 Broadway, New York City.

CANTORS ASSN. OF AMERICA, 40 Second Ave., New York City.

CHORUS EQUITY ASSN. OF AMERICA, 110 W. 47th St., New York City.

GRAND OPERA SOCIETY OF NEW YORK, 939 Eighth Ave., New York City.

JEWISH FEDERATION FOR MUSIC AND DRAMA, INC., 5 Beekman St., New York City.

LEAGUE OF COMPOSERS, INC., 29 W. 47th St., New York City.

MACDOWELL ENDOWMENT FUND ASSN., 1 E. 57th St., New York City.

MUSICAL ALLIANCE OF THE U. S., INC., 501 Fifth Ave., New York City.

NATIONAL BUREAU FOR THE ADVANCEMENT OF MUSIC, 45 W. 45th St., New York City.

NATIONAL MUSIC LEAGUE, 113 W. 57th St., New York City.

NATIONAL PATRIOTIC SONG COMMITTEE, 62 Washington Square S., New York City.

OPERA AND DRAMA SOCIETY, 1730 Broadway, New York City.

ORATORIO SOCIETY OF NEW YORK, 113 W. 57th St., New York City.

PHILHARMONIC SOCIETY OF NEW YORK, 113 W. 57th St., New York City.

RUSSIAN BALALAIKA ORCHESTRA ASSN., 1560 Broadway, New York City.

SUNDAY SYMPHONIC SOCIETY, 113 W. 57th St., New York City.

SYMPHONY SOCIETY OF NEW YORK, 33 W. 42nd St., New York City.

DIVISION XXVII

EDUCATION

ELEMENTARY EDUCATION

By ROBERT K. SPEER

PROFESSOR, SCHOOL OF EDUCATION, NEW YORK UNIVERSITY

EFFECTS OF THE DEPRESSION

Elementary School Enrolment.

—During 1931 a large number of families found themselves unable to pay tuitions in private elementary schools. As a result, the children are withdrawn. The law requires their attendance in school, and so they are flooding into the public elementary schools. A number of private schools have closed due to decreased enrolments and income or are contemplating closing at the end of the present school year. The natural effect has been to increase the enrolments in the public elementary schools. A number of states permit children to withdraw from school and go into business or industry at a specified age on condition that those withdrawing shall attend continuation classes or continuation schools for a few hours a week. As the depression continues more of these young workers are finding themselves out of employment. They cease attendance at continuation schools, and many of them return to the regular elementary and secondary day schools. Educational authorities rather generally are exerting their influence to keep children in school even though the law permits their withdrawal. This is done in order to prevent the competition of these children with adult workers. As a result of this policy the normal number of withdrawals are not materializing. In as much as the number of school entrants remains constant or slightly increases, this new tendency for children to remain in school

beyond the legal requirement, results in further increase in school enrolments.

Health.—The problem of under-nourishment has always been a very difficult one in elementary schools. It is believed that during the past year the depression has materially increased the number and percentage of those in the elementary schools who are under-nourished. It is feared that the depression is raising a problem of pupil health which will be felt for a very long period. This condition has accelerated the establishment of children's feeding stations. At the close of 1931 one finds certain New York City schools maintaining free luncheon centers.

RADIO AND EDUCATION

Installation.—One notes in 1931 a great increase in exploiting in the elementary school the productions of modern science. The newer school buildings are being wired for radios often elaborate centralized systems with outlets in each classroom, are being installed. The older school buildings are, in quite large numbers especially in the urban centers, being equipped with radios.

School Programs.—A number of programs especially designed for elementary schools are being broadcast by the broadcasting systems, the state departments of education, city school systems and commercial companies. The National Broadcasting Company broadcasts a Music Appreciation hour conducted by Walter Dam

rosch. There are three series appropriate to elementary school grades. Each series is broadcast for one half hour on alternating weeks. The nature of the programs is music appreciation, and its scope is nationwide (except the Pacific coast). This series was formerly commercially sponsored, but is now a sustaining program of the National Broadcasting Company. The Columbia Broadcasting System maintains what is called the American School of the Air. It has a consulting faculty of many prominent educators. A note on the nature of the programs appropriate to elementary schools follows: History for upper grades, music for primary and also for intermediate grades, literature for grades five and six, primary stories for lower grades, science for intermediate grades, and current events for upper grades. The programs are broadcast from coast to coast.

The State Department of Education of Ohio maintains the "Ohio School of the Air". Its programs cover a great number and variety of school subjects, and are designed to fit the Ohio State course of study. The State Department of Education of North Carolina maintains the "North Carolina School of the Air". The content of its programs is varied. Its purpose is reported to be the introduction of a new state course of study into the schools of North Carolina. The Cleveland Board of Education broadcasts arithmetic instruction. The Rochester Civic Orchestra broadcasts Music Appreciation concerts designed especially for the Rochester public schools. The Standard Oil Company sponsors the Standard School Symphony on the Pacific Coast. This is a music appreciation series for elementary schools.

Research.—Research studies pertaining to the use of radio in the schools have recently been completed or are in progress. An investigation was made at the University of Wisconsin on the educational values of music and current events radio broadcasts in rural elementary schools.

The Radio Research Bureau at Teachers College, Columbia University, is investigating classroom uses (techniques and procedures) of radio in rural elementary schools. This Bureau is also attempting scientifically to measure school achievement due to the use of radio in music appreciation (a year's series) and of certain single broadcasts. The Cleveland Board of Education is measuring the growth in arithmetic standing due to radio instruction in arithmetic, also conducting researches in other school subjects. An investigation is in progress in Ohio State University, on Oral Radio Vocabularies.

National Committees.—Two national committees have been formed to study and further the use of radio in education: (1) The National Committee on Education by Radio, (2) The National Council on Radio in Education.

TALKING PICTURES IN EDUCATION

During the year considerable interest has been shown in the development and adaptation of talking pictures to educational and schoolroom uses. President Hoover issued a proclamation inviting the Governors of the several states to encourage their Commissioners of Public Instruction to send representative children from each of the states to Washington to participate in an experiment to determine the value of talking pictures in education. The experiment was conducted under the auspices of a commercial company, and the results as published indicate great growth in learning due to the use of talking pictures. It is well to note that this was not a controlled experiment, and the content of the talking pictures was usually unfamiliar. Consequently the benefits gained, in the minds of those who are critical, are not peculiar to the talking picture. The Western Electric Company has been experimenting with and producing talking pictures for elementary schools, working in cooperation with prominent educators. Thus far several talking pic-

tures have been produced for use in elementary classrooms. Among the subjects are Music Appreciation, Vocational Information, Social Studies (How the Government Works), and so on.

COOPERATIVE GROUP TEACHING IN ELEMENTARY SCHOOLS

The cooperative group teaching plan evolved by Professor Hosis of Teachers College, Columbia University, is gaining the wide-spread interest of elementary school specialists. In developing the individual aptitudes of children before adolescence and in developing latent teaching talents and interests of teachers, this plan promises fine results. The teachers on a grade or a year select one of their group as chairman. Each teacher selects the subject group she likes best, *i. e.*, social sciences, including geography, history, civics and current events; dramatics, including music, art and oral expression; health education, including physical training, hygiene; English, etc. Each room is completely equipped for teaching the group specialty. At the beginning of a certain unit of work which usually lasts a month, the teachers plan the work for that month, stressing correlation, coordination and articulation of subject matter. At these meetings the work is planned, and the progress and character development of the children in their respective classes are discussed. In all conferences both on plan and on progress, the children are the center of interest, not the subject matter. The advocates of this plan claim the following advantages: increased interest in subject matter by pupil and teacher, better equipped rooms, and better scholastic results. Some educators believe that the plan can be extended below the fourth year, but others believe that these children are too young for such complete departmentalization. Although some critics believe that the child is lost among so many teachers, still others assert that these regular meetings help the teacher to get a many-sided view of each child in

her class. The plan is being tried throughout the country.

SUPPLEMENTARY READERS

In the opinion of specialists in elementary education the most pleasing progress in recent years, in the means or tools of instruction, has been made in supplementary reading materials for elementary school children and especially for those in the primary grades. The core idea of the newer supplementary reading materials is social science. There has been a lessening in the number of stories of fiction and a reaching out to history, travel, present day biographies, science, nature study, people and things in the immediate environment (steam shovels, derricks, engines, etc.), for reading content. The books are better graded, more of them are graded experimentally. They are based on studies of children's interest. They recognize and utilize the vocabulary studies. They are more accurate in the factual content. They include a greater variety of subjects to stimulate children's interest. The illustrations amplify the text and make it more dramatic. The hygienic factors of the newer books—type, paper, spacing, margins, etc.—are improved.

THE WORKBOOK IN ELEMENTARY EDUCATION

The introduction of pupils' workbooks to accompany basic reading textbooks must be noted as a distinctive change in elementary schools in the last few years. Almost every set of basic reading textbooks for use in elementary schools now has corresponding workbooks. Two years ago few such workbooks were on the publishers' lists. The workbook attempts to systematize the instruction (content and method) usually left to the organization of the teacher. Specialists in elementary education usually accept it as a device and note its advantages to be (1) for use with children having a difficult time in reading, (2) for use with foreign children where vocabulary problems predominate, (3) for remedial work, and

SECONDARY EDUCATION

(4) for use in school systems where the teaching staff is deficient. Progressive educators accept the work-book as having some value if it is used intelligently, but decry its thwarting features when superior elementary teachers are involved.

ETHICS IN THE TEACHING PROFESSION

"Ethics in the Teaching Profession", a 1931 Research Bulletin of the National Education Association, attempts to survey and appraise the professional actions of teachers groups. That there has been accelerated interests in professional ethics among teachers recently is indicated by the increase in the number of states reporting adoptions of codes. The first official state code for teachers was adopted in Georgia in 1896. California adopted a code in 1904 and Alabama in 1908. By 1920 the teachers associations of 8 states had adopted official codes. In 1929 the National Education Association officially approved a code and by 1930, 33 states reported adoptions of codes of ethics. This apparent interest in codes of ethics in teaching lead the N. E. A. officials to prepare a selected and annotated list of standards of professional conduct which might be used as a basis for discussion in

teacher training classes and among teachers in service.

The bulletin sets up standards of teachers conduct (1) in relation to pupils, parents and community, (2) in relations with associates, (3) in relation to the profession, (4) in securing and terminating employment, (5) in connection with teachers agencies, publishers and school supply houses. It appears that the body of material in the bulletin is being used as a part of the in-service training of elementary teachers under the direction of superintendents of schools and others. The frequent treatment which problems of professional ethics has received during the last few years in textbooks prepared for use in professional schools, in trade journals, and in state and national conventions, is further evidence of the increasing interests in these problems.

RURAL EDUCATION

A renewed emphasis on rural education is indicated by the current *Yearbook* of the National Society for the Study of Education, by a *Research Bulletin* of the National Education Association on rural education and, too, by the election of Miss Florence Hale, state agent for rural education in Maine, as president of the National Education Association.

SECONDARY EDUCATION

By PHILIP W. L. COX

SCHOOL OF EDUCATION, NEW YORK UNIVERSITY

EFFECT OF ECONOMIC DEPRESSION

Enrolment.—The underlying conditions which this year's developments in secondary education reflect are those of the economic depression. On the one hand, the enrolments throughout urban and suburban America have increased rapidly due both to the lack of employment opportunities and to the more stringent school laws of industrial and progressive states which require full time attendance in school of all children

until sixteen, seventeen, or even eighteen years of age; indeed, the Federal Office of Education sponsors an estimate that 5,000,000 youths are enrolled in secondary schools as compared with 2,000,000 in 1920, 1,000,000 in 1910, and 200,000 in 1893.

Expense and Policy.—On the other hand, there has been a great deal of pressure from tax-payers' associations to reduce school expenses and, naturally, such pressure has borne most severely upon the more recent educational developments,

chiefly those at secondary level. Which of the two powerful tendencies will triumph is a question that is troubling leaders in secondary education to no small degree. Can and will communities continue to sanction and support the expanded programs of their high schools involving salaries and contingent expenses of departments of health, recreation, guidance, library, home economics, industrial arts, music, art, aeronautics, and the rest, in addition to the older academic subject departments? Will they invest further in new buildings and grounds for the ever-increasing school population?

Importance of Continued Expansion.—Only in these areas can expenses be decreased or limited for years to come. For communities will not permit the interest on and retirement of bonds to be abandoned; and it would be obviously too wasteful to fail to maintain properly the plants already built but not yet paid for. It seems certain, however, that whatever temporary recessions may take place, urban communities cannot possibly fail to continue the elaborate program of expansion on which they have embarked. To do so would surely result in the elimination of great numbers of present or potential high school pupils. Such elimination would immediately increase the competition for jobs and the resulting unemployment problem would grow more and more complex and insoluble.

ENROLMENT FACTORS

School Facilities and Unemployed Children.—It is, indeed, impossible for urban communities to prevent the rapid increase in enrolments. Full time high and vocational schools are already crowded to capacity; New York City alone proposes to construct twenty-one new high schools in addition to the forty-six which are already in existence. Continuation schools have been obliged to take over much of the burden of promoting full-time education for the great numbers of formerly employed youths of fifteen to seventeen or eighteen years of age

who have lost their jobs and who are therefore required by law to return to full time schools. Twenty-six cities in twenty-one states report that unemployed children are actually brought back into the school system on a basis approximating full-time attendance. (*The American Child*, National Child Labor Committee, Vol. XIII, No. 7, Sept. 1931.) At the same time the enrolments in evening high schools have reflected the general enthusiasm for the equivalent of a high school education. In New York City, the term of the regular evening high school has been increased and summer evening high schools have been authorized. These evening high school enrolments of 1930-31 were over ten per cent larger than in any previous year. Meantime the movement for all-year schools to supplement or replace the combinations of ten month and summer high schools has advanced. In addition to Newark, N. J., where such a high school has been established for two decades, Nashville, Tenn., Omaha, Neb., Columbus, Ga., Aliquippa, Pa., Gary, Ind., Lakewood, O., and several other cities have recently installed all-year schools. (*School and Society*, Vol. 34, No. 872, Sept. 12, 1931, p. 362.)

Administrative Policy.—While the growth in secondary education is taking place due to influences over which the school has no direct control, and while school boards are perforce seeking to make provisions to meet the demands of actual or potential students, educational administrators divide themselves into two groups: those who welcome the challenges implicit in the diversity of abilities, interests, social backgrounds, and destinies represented by these youths; and those who are overwhelmed by the difficulties presented or apprehended. In the latter class are the New York State superintendents of schools who resolved in their autumn assembly at Lake Placid (1931), that all youths who at fourteen years of age cannot pass rigid tests of ability and achievement should be sent into industry. (*The New York Times*, September 30,

1931.) The absurdity of such a recommendation is shown by the experience of the New York City Bureau of Junior Placement which has reported that in 1930 it was unable to find positions for two out of three 17-year olds, three out of four 16-year olds, and four out of five children under 16 who applied to the Bureau for Placement. (*The American Child*, Vol. XIII, No. 7, Sept. 1931, p. 1.)

Federal Committee Cooperation.—Definite support for those administrators and school boards who are endeavoring to meet the situation courageously is contained in the plan of the President's Emergency Committee for Unemployment (August 5, 1931) to seek the support of local school officials in encouraging students to remain in educational institutions instead of seeking employment.

NATIONAL SURVEY

Aside from the economic aspects of secondary educational movements and events, the most noteworthy is the progress of the National Survey of Secondary Education for which Congress has appropriated \$225,000. This survey is now in its third year. The reports of each aspect of this survey are being published by the Federal Office of Education as advance sections of the Biennial Report of 1932. The first of a series of regional conferences on secondary education called by Commissioner W. J. Cooper to discuss the implications of the findings of the Survey was held at Colorado State Teachers College during the summer of 1931. The program of the National Survey is being supplemented by the research projects undertaken by progressive state and city departments of education and by schools of education throughout the country.

SCHOOL REORGANIZATION

Progress.—The reorganization of secondary schools from the established four-year high school to the five- or six-year junior and senior high schools, the junior-senior high school, or the six-year high school, has proceeded during the current year.

If the depression actually retards this movement its effects will not be immediately felt. Of 157 cities of 30,000 or more population, 131 had by 1930 launched on the reorganization program, 79 of them having, indeed, already completed the transformation. In four-fifths of all these cities, at least one half of the pupils above the sixth grade were attending reorganized schools.

Types.—Of the three types of reorganized secondary schools mentioned above,—(1) segregated two or three-year units; (2) units located in the same building, and (3) undivided five- or six-year high schools. The last has shown the most rapid increase in number of schools during the last four years.

State Participation.—In connection with the readjustments of schools at secondary level, state departments are taking an increasingly vigorous and enlightened leadership. New Jersey, New York and Minnesota are among the states wherein state-wide participation in secondary school curriculum revision has been recently undertaken.

COLLEGE ADMISSION REQUIREMENTS

In the field of college admission requirements which have proved so significant an obstacle to secondary school progress, two developments deserve mention. In the East, the stronghold of conservatism, both Yale and Princeton have ceased to demand Latin of candidates for the bachelor of arts as well as the scientific degrees, and in the far West, the Universities of Washington and California have instituted College Entrance Board examinations as the basis for selecting candidates for admission.

MISCELLANEOUS TOPICS

Homogeneous Groupings.—Two subjects which at present receive generous space in secondary education magazines and meetings may be mentioned. The status of homogeneous groupings of secondary school pupils on the basis of abstract "general" intelligence, which had received widespread acceptance in theory and prac-

tice, is being vigorously attacked by investigators and publicists who have discovered that pupils who are grouped homogeneously on one basis are not in fact homogeneously grouped on some other bases.

Test Values.—The prognostic values of records, tests, and exploratory courses are being rather successfully challenged after a decade of somewhat uncritical acceptance. While such instruments may isolate the extreme cases of special aptitude and special disabilities, they foretell the success of most pupils little better than guesswork would do.

Social Reconstruction.—Current educational literature reflects in no small degree the popularization in this country of the Russian Five Year plans for social reconstruction. Faith in telic as opposed to genetic evolution is reflected in prophecies of American educational developments

at some future day. In particular, Snedden's *American Secondary Education in 1960* (Teachers College, Columbia University, Bureau of Publications, 1931) and the University of Chicago professors' endeavors to forecast the schools in 2031 (*School Review*, Vol. XXXIX, No. 4, April, 1931) deserve mention.

Legal Sanction For Junior College.—No exposition of secondary education in 1931 would be complete without noting the decision of the North Carolina Supreme court that the Board of Education of Ashville has authority to establish and maintain a public junior college. This decision has been compared to the famous Kalamazoo decision of Justice Cooley in 1872 in favor of public high schools, on which have been based the legal sanctions for tax-supported secondary schools throughout the country.

COLLEGIATE EDUCATION

By ARTHUR J. KLEIN

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ECONOMIC DEPRESSION AND HIGHER EDUCATION

General.—The black banner of "economic depression" has been waved vigorously in the discussion of every phase of higher education in 1931. Any review of tendencies in the college and university world during the year is compelled to recognize the guiding influence that has been exercised by acute consciousness of "hard times". This awareness of general economic distress may have tended to make higher education folk exaggerate somewhat their own sufferings as compared with those of business enterprises and governmental units, but it is obvious that the pinch of financial constriction has been the dominant factor in higher educational thinking during 1931.

Cut in State College Incomes.—Reduction of the incomes of both public and private institutions has been very real. It is reported that

in South Carolina the cut for public higher institutions amounts to 33%. In Oregon, approximately 20% of the legislative appropriation for the state's higher institutions has been withheld by the governor's veto of part of the sum voted and through the effect of a petition for referendum upon this financial measure. In Ohio, appropriations for the five state institutions have been severely reduced, and the State University is placed upon a financial basis approximately the same as that of four years ago.

Check in Normal Growth.—The effects of these positive losses have been accentuated also by the more general failure of public appropriating bodies to provide for normal increases of attendance and growth. Interviews during November, 1931, with twenty or more presidents of state universities and state colleges revealed that in the majority of cases financial distress was confined to failure to secure

increases for operation and maintenance and for additional capital investment. Indeed, in a few instances slight increases were obtained for operation, and in one instance at least, that of Arkansas, \$2,000,000 was provided for building construction at the higher institutions. Optimism, however, appears to be justified when the deflation of security values during the past two years is compared with the relative stability of public support for higher education. As compared also with the effects of the depression upon the lower public schools, the state-supported higher institutions seem to have secured generous public grants. Doubtless this is due in part to the wide tax base upon which support of higher education rests as contrasted with the large proportion of public school support that comes from very limited local areas.

Loss of Funds By Private Institutions.—Although statistical information is not available it seems probable that the private colleges and universities that depend upon gifts for current operation and construction and upon endowment income to meet a large percentage of their expenditures, have suffered more severe losses of resources than have the public higher institutions. Endowment funds that were invested in what appeared to be conservative securities in 1928 and 1929 have been tremendously reduced in asset value. The passing or reduction of dividends and of bond interest payments has reduced income even more distressingly than have reductions of the market prices of securities. Some of the smaller institutions that had from 30 to 80 per cent of their endowment funds invested in real estate bonds upon city property and in farm mortgages can neither change the form of these investments nor expect for a considerable period any income from these types. Bank failures have in several instances tied up current cash derived from income on investments and from student fees. Inasmuch as the latter type of income constitutes for many private institutions from 40 to 75 per cent of the total annual

expenditure for current operations, institutions that deposited fall receipts in banks that have since closed their doors are in great distress. The conditions that have reduced the assets and institutional income of the colleges themselves have also reduced the resources and incomes of individuals and organizations that in normal periods contribute substantially to the current operation and the plant development of the private institutions. These gifts have been cut off in large part.

THE FINANCIAL SITUATION AND ENROLMENT

Undergraduate Analysis.—The financial situation in both public and private institutions has not been relieved by reductions of enrolments which could be reflected in decreased salary and maintenance costs. During the academic year 1930-31, there was a positive gain in the number enrolled, in part due to American faith in the utilitarian value of higher education and in part due to the fact that employment opportunities for young people were neither abundant nor attractive. Some institutions report slight reductions in undergraduate enrolments in the fall of 1931, but others report actual increases, although not in as large percentages as in the past. Changes in undergraduate enrolments have not relieved the financial demands upon the institutions.

Graduate Enrolment.—Enrolments upon the more expensive graduate levels seem to have been given an impetus by the depression. College graduates who could not secure employment during the spring and summer of 1931 re-entered college as graduate students in the fall of the year. Many students who obtained their master's or even their doctor's degrees in the spring have also continued their work in graduate schools for similar reasons. The public schools and the colleges which usually absorb a large part of the new masters and doctors have tended to reduce rather than to increase their staffs. Fewer persons with positions in the lower and higher schools are

attracted to outside positions in other occupations; many experienced schoolmen who had entered industry have been released and seek to re-enter public school or college employments. All these groups contributed to an increased graduate enrolment in the universities in the fall of 1931.

Local College Enrolment.—Another rather unlooked for effect of the financial distress upon enrolments is reported by a number of the smaller private colleges. They report that students who under normal economic conditions would go away from home to attend the state university or some of the more noted private institutions are now remaining at home and enrolling in the local college. This has resulted in substantial and desirable increases in the enrolments of some colleges that draw almost exclusively from narrow territorial areas. In a number of instances the additional student fees collected more than balance the increased expense.

METHODS TO MEET FINANCIAL RESTRICTIONS

General.—The methods that the colleges and universities have used to meet financial restrictions are of special importance since the wisdom, or the lack of it, displayed during 1931 may easily determine the condition in which higher education in America finds itself when the general depression is overcome. It seems that the usual devices are increase of student fees; reductions of salary rolls, of library expenditures, and of the costs of plant upkeep; mergers of institutions and efforts to secure economies through united control or management; and abandonment of the effort to continue or of the effort to continue as degree-granting institutions. All of these developments deserve detailed treatment but lack of space compels rather cursory presentation.

Student Fees.—Although a number of institutions have followed the tendency that has been evident during the past ten years to meet financial needs by increasing student fees, the moderation with which this method of dealing with the present

emergency has been used is somewhat surprising. No doubt unwillingness to pass the burden on to the student is due in part to fear that under present economic conditions large fee increases would result in a reduction of enrolments below the number required for effective employment of physical plants and academic staffs that have already been assembled.

Salary rolls have sometimes been reduced by failure to replace persons who for one reason or another have severed their connection with the institution. In some institutions the same effect is produced by inducing staff members to take a year's leave of absence without pay or, in a few instances, upon half pay. The favorite method of reducing salary costs has been to reduce the pay of officers and teachers. Of sixteen state institutions from which information was obtained fifteen had made salary cuts. Isolated reports from a large number of private institutions indicate that this method has been adopted by at least as large a proportion of the private as of the public colleges and universities. Ten per cent seems to be a favorite reduction, although at some institutions cuts are based upon a sliding scale. In a number of institutions reductions apply to salaries as low as \$1,500.

Attitude of Faculty Members.—At the meeting of the American Association of University Professors in November, 1931, individual professors freely charged institutional administrators with using the financial stringency to get rid of professors who were not sufficiently subservient to the authorities and with stupid talk of ingenuity in meeting income reductions by cutting professorial salaries instead of by other types of economy. Contact with between two and three hundred college instructors in more than seventy institutions scattered in every state, since the beginning of the academic year 1931-32, has provided rather abundant evidence that faculty members are convinced that the reductions have been necessary and reasonable. Morale has not been seriously harmed, indeed definite im-

provements of morale have been reported quite frequently that are directly due to measures that enlisted the assistance and demanded sacrifice on the part of faculty members.

The Library Budget.—Reduction of expenses by reducing the library budget for service and materials is a favorite method that indicates serious misunderstanding of the importance of the library in modern college education and total ignorance of the fact that the scars of such treatment cannot be removed in the future without extraordinary waste of funds. Serials, fugitive materials, periodicals, and many other publications which are the essential tools of study and scholarly work must be purchased currently if, in some instances, they are to be secured at all, or if, in other instances, they are to be secured without paying extravagant premiums. Starvation of the library is the most shortsighted and stupid device that has been very generally adopted, or accentuated, by higher institutions during 1931, as a means of not spending.

MERGERS AND COORDINATED MANAGEMENT

Although isolated examples of mergers of individual institutions may be found during 1931, such as that of Butler University and the Teachers College of Indianapolis and that of New Orleans University and Straight College, the full effect of financial incentive to this type of action will not be felt probably until 1932 and 1933. It is interesting to note, however, in this connection that the two state surveys of higher educational institutions published by the U. S. Office of Education in 1931, the surveys of Arkansas and of Oregon, both deal with problems of greater economy and efficiency through coordinated management of the public educational institutions. North Carolina passed an act in 1931 which establishes a single governing board over all its higher institutions, and an outside committee, headed by George A. Works of the University of Chicago, is engaged upon a study that will serve to guide the new board in its

problem of coordination. Georgia has also attacked the confused and extravagant situation that exists with reference to its public higher institutions by authorizing the appointment of a single board of regents with extensive powers to coordinate institutional effort and expenditure.

FEDERAL GOVERNMENT FUNCTIONS IN EDUCATION

Financial distress at local centers naturally tends to produce new demands that educational enterprises in the states receive additional direct support from the Federal Government. The discussion of the functions of the Federal Government in education that appeared late in November as the report of the National Advisory Committee on Education is, therefore, especially timely. Dr. Henry Suzzallo, who was primarily responsible for the first volume that contains statements of principals and recommendations, has performed a difficult task in a brilliant manner. The major service of the report consists in the impetus that it will give to discussions of an acute problem that has been approached most usually from very prejudiced and provincial viewpoints. The solutions offered call for a degree of educational statesmanship that cannot as yet be found in any state of the union.

ROLE OF THE EDUCATIONAL FOUNDATIONS

Whatever theoretical and practical objections may be entertained with reference to the part that the great educational foundations play in American higher education, their function as shock absorbers and sources of supplementary power must be recognized in the emergency that confronted the colleges and universities in 1931. Not only have they aided individual institutions and individual phases of institutional life, such as the library, at a time when starvation threatened many worthy enterprises, but they have provided funds for important and essential studies that are fundamental to improvement which would have ceased

almost entirely if it had not been for foundation support. Notable among such studies that have been completed or undertaken during the year are those of the National Committee on Standard Financial Reports, the Report of the National Advisory Committee, the North Central Association of Colleges and Secondary Schools study of college standards, the rating of Negro Colleges and Secondary Schools conducted by the Southern Association of Colleges and Secondary Schools, the study of College Teaching under the auspices of the American Association of University Professors and the study, re-

ported but not definitely announced, of state school systems.

The United States Office of Education has undertaken under Congressional appropriation a survey of Educational Finance which will include a study of the financing of higher education. This is the fifth of the national surveys undertaken by the Federal office of education. Two previously undertaken, one of Secondary Education and one of Teacher Education, are still in progress, while the surveys of Negro Colleges and Universities and of the Land Grant Colleges and Universities have been completed.

EDUCATION FOR THE PROFESSIONS

BY ALONZO F. MYERS

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LEGAL EDUCATION

National Associations and Standards.—The Association of American Law Schools, at its annual meeting in Chicago, December, 1930, made four changes in its requirements for membership. Beginning Sept. 1, 1932, the minimum size of law school libraries will be increased from 7500 to 10,000 volumes; the minimum figures set for library expenditure will be increased from \$1000 per annum and \$7500 over any period of five years to, respectively, \$1500 and \$10,000. The minimum number of full-time instructors will be increased from three to four. In addition to these specific requirements, there has been adopted a blanket provision, in effect at once, calling for "reasonably adequate facilities" and "standards and practices generally recognized by member schools as essential to the maintenance of a sound educational policy."

National Conference of Bar Examiners.—A new national organization, the National Conference of Bar Examiners, held its first meeting at Atlantic City, Sept. 16, 1931. Its stated purposes are to increase the efficiency of state boards in admitting

candidates fully equipped both as to knowledge and as to character; and to study and co-operate with other branches of the bar in dealing with problems of legal education. Although organized under the auspices of the Section of Legal Education of the American Bar Association, and meeting regularly at the time of the meeting of the Association, it is an independent body which admits to membership "all members of boards or committees of law examiners, or character committees of the various states."

Bar Admission Requirements.—Since the last issue of THE AMERICAN YEAR BOOK, twenty-seven states (as compared with nineteen last year) have made changes in their rules or laws affecting admission to the bar. Included is Indiana, whose legislature

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and Supreme Court have combined to defeat the intent of an antiquated constitutional provision entitling every person of good moral character, being a voter, to admission to practise law; a state board of law examiners has been constituted, appointed by the Supreme Court. Delaware has established a similar board, in lieu of its former three county boards, leaving Arkansas now the only state in which admission is not fully centralized, subject, in some cases, to the right of graduates of certain law schools to be admitted without independent examination. Utah abolished this latter "diploma privilege" during the year. The number of jurisdictions that, in addition to a bar examination, require all applicants to have secured a specified amount of general education, and, following this, to study law during a specified number of years, remains unchanged as fifteen out of a total of forty-nine (forty-eight states and the District of Columbia). Of these fifteen, the number that set a standard of general education as high as the two years of college recommended by the American Bar Association has been increased from eight to ten (add New Jersey and Rhode Island). The number of states that require something in the nature of two years of college, but not necessarily, in the case of all applicants, before the beginning of the prescribed period of law study, has risen from six to eight (add North Dakota, by legislation effective in 1936, and Washington, by Board rules immediately effective).

Law School Statistics.—In 1930-31 the degree-conferring law schools in the United States numbered 180, of which 82 were full-time, 75 part-time, and 23 of the "mixed" type, maintaining separate full-time and part-time divisions. As compared with the year before, there were two additional full-time schools and two less part-time schools, the total being the same. The autumn attendance at each group was as follows: Full-time (complete), 14,836, being 333 less than the year before; part-time (6 schools not reporting), 14,213, being 1677 less than the year before (6

schools not reporting); "mixed" type (4 schools not reporting), 11,667, being 1250 less than the year before (2 schools not reporting); total for all schools, 40,716, being a loss of 3260. Of the students attending schools of the "mixed" type, 3927 were in the full-time and 7740 were in the part-time divisions. At the close of the academic year, 63 of the full-time schools (77 per cent) were members of the Association of American Law Schools, and these with 7 others (making 85 per cent), had been approved by the Council on Legal Education as complying with the standards of the American Bar Association. No exclusively part-time school had qualified under the standards of either Association, but 6 of the "mixed" type were members of the Association of American Law Schools, and these, with one other, had been approved by the Council on Legal Education. Schools approved by the Council contained 91 per cent of the exclusively full-time attendance, 35 per cent of the attendance at schools of the "mixed" type, and 43 per cent of the total attendance at all law schools.

MEDICAL EDUCATION

Selection of Medical Students.—The tremendous increase during the past few years in the number of students who desire to gain admission to American medical colleges has caused the Association of American Medical Colleges to seek reliable means of selection. During the past two years the Association of American Medical Colleges has been experimenting with aptitude tests for predicting success in medical schools. For the school year 1930-31, approximately 7,000 applicants were accepted for admission to medical schools (actual enrollment of first year medical students, 6,546). These were selected from among more than 30,000 applications. The problem, then, is for the admissions officers of each school to select the best one out of four applicants.

Aptitude test results have been correlated with two years' work in medical schools for 963 students, and with first year medical school grades for

4,811 cases. High correlations were obtained with both groups. Study was also made of the relative value of the aptitude test as compared with other criteria for predicting success in the medical school. The criteria studied, in the order of their value as shown by the study, were: aptitude test, grades in premedical subjects, interview ratings given by medical school admissions committees, and semester hours of premedical credit least valid. From the study, the best criterion seemed to be a combination of premedical grades and test results. After two years' experiment, the results were definitely encouraging, and at the last meeting of the Association of American Medical Colleges, the aptitude test was adopted as a normal requirement for admission to American medical colleges. In carrying out this requirement the test has been administered this year to approximately ten thousand premedical students applying for admission to the medical schools.

There is an increasing tendency for medical students to come to the medical school with a background of general education which is in excess of the amount required for admission. For the present school year 46 per cent of the first year medical students presented baccalaureate or high degrees. Many students take combined academic and medical courses which give them a baccalaureate degree at the end of the first or second year of medicine. About 70 per cent of the medical graduates of 1931 had a bachelor's degree as compared with 15 per cent in 1910 and 24 per cent in 1920.

New Facilities for Medical Study.—One new medical school began instruction in the session of 1930-1931 (Duke University School of Medicine) and two of the schools which formerly offered only the first two years of the medical course will add the clinical years this fall (University of Southern California School of Medicine and University of Missouri School of Medicine). A merger of significance to graduate medical education took place when, in July, the New York Post-Graduate Medi-

cal School and Hospital became a part of Columbia University.

American Students in Foreign Medical Schools.—An interesting development of the past year in medical education was the enrollment of large numbers of American students in foreign medical schools. The total number reported to have been enrolled in 90 European schools was 663. There were 277 registered in 8 Canadian medical schools. That this migration of American students is a new development is evident from the small number of students reported to have graduated from foreign schools last year. An explanation may be found in the statistics on medical education published in the last few years, which show that the number of students admitted to the American medical schools each year is becoming more and more a constant figure. A large proportion of the students who go abroad probably are influenced by the difficulties encountered in securing admission to American medical colleges and by the present low cost of transportation and living abroad. Presumably, most of these students expect to return to the United States to practice. Recent comparative figures show that the United States has the largest relative supply of physicians of any country. There seems no immediate need for a larger number of medical graduates than the American colleges are able to supply. The comparative figures of persons per physician follow:

United States.....	800
Switzerland.....	1250
Denmark.....	1430
England and Wales.....	1490
Germany.....	1560
The Netherlands.....	1820
Sweden.....	2860

General Trends and New Developments.—American medical education during 1931 has shown the same tendencies that have been manifest during the past two decades, namely, the ever closer association of the medical schools with the other activities of the universities, and an increase in facilities for clinical teaching brought about by the building of hospitals or hospital units in close

proximity to, and affiliation with, the medical schools. The opening of new clinical units at the Medical School of Western Reserve University, University of Chicago and the Johns Hopkins University may be cited as examples of fulfillment of this tendency.

There is a definite tendency to discourage fixed premedical courses such as certain of the universities and colleges of the country are offering. The feeling is that aside from meeting the fundamental minimum requirements for entrance to a medical college each student should be encouraged to do the major portion of his premedical work in the subjects in which he is most interested.

There is a definite movement in some of the medical schools toward a liberalization of the curriculum and toward throwing the student more and more on his own resources. This tendency naturally meets with some opposition on the part of the more conservative instructors, but it is significant that no school which has embarked on such a course of late has seen fit to change its program and revert to the old order. Whether or not the end product will be better remains for the future to disclose.

Medical educators have within the past few years given greater attention to internships and to graduate medical education than at any time in the past. Aside from the University of Minnesota and the University of Pennsylvania, the medical schools of the country are giving little attention to graduate medical education and preparation for the specialties. National organizations of specialists are endeavoring to set up certain requirements for recognition in the specialties. In this connection they recognize, however, that the problem is an educational one and that the medical schools of the country will probably assume responsibility for this type of training, ultimately.

EDUCATION FOR THE MINISTRY

Merging of Seminaries.—Several denominational seminaries have re-

cently merged, following the example of Andover and Newton, Colgate and Rochester. While geographical distances may separate those in the same denomination, yet there is a tendency for them to major in different fields as in homiletics, missions and graduate work and thus give the optimum training service to their respective denominations. Nor are there wanting signs of interdenominational mergers of seminaries, a potent contributor to church unity.

Requirements for Admission.—

There is no paucity in numbers of ministerial students; the supply exceeds the demand. This may be due to the increased grouping of rural churches in circuits and the fusion of urban parishes. No little concern is warranted as to the scholastic preparation of the ministers for tomorrow. Of the 437 admitted to the Protestant Episcopal Church, during the last triennium for which we have statistics, 53 per cent had the A.B. degree, 6 per cent had grammar school only, 20 per cent high school only, 8 per cent went to college for one or two years, 13 per cent went to college for four years but left without a degree. Of the 75,000 ministers in eighteen major white denominations, almost 29,500 did not claim to be either seminary or college graduates. The largest percentage of graduates of both is from the Roman Catholic Church. Some seminaries appealing to and earnestly desiring students with the baccalaureate degree let down the bars and admitted a number without the degree as "special" students. It is said that there are certain seminaries which adhere to the rigidity of the baccalaureate requirement. In the present year some of these seminaries had more applicants than they could accommodate. General denominations are exacting more academic preparation in those they ordain. Scholastic requirements are in the ascendency. Greater liberty is accorded matriculants in their religious beliefs. Apparently liberals seem nowhere debarred. Their religious experience is taken for granted;

certainly it is not officially scrutinized for admission to any theological seminary. This two-fold laxity, if such it may be termed, reaches a climax in personality requirements.

Curricular Changes.—A survey of seminary catalogues shows Hebrew and Greek diminuendo and social studies crescendo. The seminaries as a whole seemingly now cover every phase of ministerial requisites. Courses in international relations and industrial problems are plentiful. Those that make for better rural and urban understanding are increasing. Current religious movement courses are given, and courses in religious journalism have been instituted. Pageantry is bulking larger. Courses in homiletics are sharing with program making the latter in a number of instances getting a lion's share. Mental hygiene and pastoral case study are coming to the fore. During the present year a score of students from nearly as many seminaries spent their vacation in the Worcester, Mass., Hospital for the Insane, studying mental diagnosis and therapy. While it is not feasible to prepare ministers to be psychoanalysts and psychiatrists, or "surgeons of the soul," yet they can be equipped to become a "first aid" or to know where to allocate parish cases remedially.

ENGINEERING EDUCATION

Enrollment.—Accurate and comprehensive figures on enrollment in American engineering colleges is available for the first time since 1927-28, the United States Office of Education having completed and published its survey of engineering enrollments during the past year. This survey, which includes returns from 145 engineering colleges, gives 78,685 as the total of all engineering college enrollments. This is an increase of 20 per cent since the survey made three years previously. Enrollment in graduate courses has increased very much more rapidly than in undergraduate courses,—75 per cent in the past three years. Graduate enrollment has, in fact, trebled since 1924-25,—from 1,000 to 3,000 students.

Placement of 1931 Graduates.—The Society for the Promotion of Engineering Education collected information on the placement of 1931 engineering graduates in June last, from 88 institutions. The figures indicate that about three-eighths of all graduates had secured "permanent" positions at commencement time. This was in marked contrast to previous years when virtually all graduates had secured positions before commencement. The return of many of last June's graduates for further academic work is one result of this inability to secure employment.

Effect of the Depression on Cooperative Courses.—This seems to have been different in different institutions, but in general to have exercised a marked limitation on the operation of the usual cooperative plan, which plan may be characterized as a curriculum administered through alternating periods of academic work in college and of organized and coordinated employment in industry or engineering practice. At least one institution has been forced temporarily to abandon all effort to place its students with employing concerns for their periods of industrial experience.

Orientation of Prospective Students.—For a number of years there has been increased discussion among engineering educators, and others, of the proper guidance of young men contemplating engineering as a career. Such guidance is intended to have both the negative effect of deterring young men not properly equipped for the study of engineering from entering engineering schools, and the positive effect of directing into the channels of technological education those who have the proper interests and abilities. Evidences of the awakening concern over this matter are afforded by the considerable number of career booklets published or in preparation by various agencies. The United States Office of Education, Engineering Foundation, The State Education Department of New York, certain of the national engineering

societies, and a considerable number of engineering schools.

Summer School for Engineering Teachers.—This undertaking of the Society for the Promotion of Engineering Education, established in 1927, had a successful year in 1931. Two sessions of the school were held, one on Chemical Engineering at the University of Michigan, and one on Mathematics at the University of Minnesota. The two sessions had a combined attendance of nearly 160 teachers who represented over 90 institutions in various parts of the United States and Canada. The attendance at the mathematics session was the largest yet reported by the Society. Sessions of the school on English and on Engineering Economics are planned for 1932.

Engineering College Buildings.—Several notable additions to the engineering college buildings of the country have either been started or completed during the year: Massachusetts Institute of Technology, Rensselaer Polytechnic, Texas Agricultural College, Purdue University, Washington State University, University of Virginia, and Alabama Polytechnic Institute. Especially noteworthy additions to engineering college buildings are the new Mechanical Engineering Building of the University of Wisconsin, and the new Hydraulic Laboratory of the University of Iowa.

EDUCATION FOR BUSINESS

Enrollment.—Enrollment in business courses in various types of schools showed some very interesting changes. There was a marked increase in the number of students enrolled in high schools taking business courses. Enrollment in private business schools seemed, for the most part, to have decreased sharply. This would seem to indicate that while the pressure of depression made students more conscious of the immediate vocational purpose of school work, they nevertheless found it desirable to get this training in the cheapest possible way. The number

of students enrolling in collegiate schools of business seemed to have decreased somewhat. One of the outstanding changes in business education as well as in other fields of education was the greatly increased interest in adult education. Plans appear to have been in process of formation which would provide much more satisfactory adult forms of business education.

Metropolitan Council on Business Education.—New York City leaders of business education carried through to completion a more thorough plan for cooperation between business men and business teachers in meeting the problems of business education by setting up a Metropolitan Council on Business Education composed of an equal number of representatives from each group. Such councils appear to have been organized in several other cities and should do much to make the business man aware of his obligations and at the same time make the business teacher more alive to his responsibility.

Association of Business Educators.—The annual meeting of the American Association of Collegiate Schools of Business was held in New Orleans in March, 1931. It indicated an attempt to recognize the importance of business education in the South as well as in other industrial sections of the country. An important contribution to this field in 1931 was *University Education for Business* by James H. S. Bossard and J. Frederick Dewhurst (Philadelphia: University of Pennsylvania Press). The Eastern Commercial Teachers Association continued its splendid program of publishing yearbooks. The Fourth Yearbook on *Modern Methods of Teaching Business Subjects* was based upon the annual meeting held in Boston. The special merit of this book is that it makes an effort to give methodology a practical point of view in terms of a series of demonstration lessons printed in the book to illustrate techniques in carrying out the methods proposed. The Commercial Education Associa-

tion of New York City and Vicinity also contributed a yearbook on the *Use of Projects in Commercial Teaching*.

Conscious of the need for a national organization to speak for business education became greater. The Eastern Commercial Teachers Association having its strength in the Northeastern States and the National Federation of Commercial teachers in the Middle West, both are powerful organizations; but neither can speak for all business teachers. The Department of Business Education of the National Education Association began sincere efforts to assume this much needed national leadership. The movement toward closer international cooperation in business education continued. The proposed international convention in London in July, 1932, was looked forward to with eager interest as a possible focus for world organization.

THE PROFESSIONAL EDUCATION OF TEACHERS

National Survey of the Education of Teachers.—This survey, which is by far the most comprehensive of teacher preparation which has ever been undertaken in this country, is now in the second year of its three-year program. It is one of a series of national studies under the direction of the United States Office of Education. Dr. William John Cooper, Commissioner of Education, serves as director of all of these. Dr. E. S. Evenden, Professor of Education, Teachers College, Columbia University, was appointed as Associate Director in active charge of the study and Benjamin W. Frazier, Senior Specialist in Teacher Training of the Office of Education, as assistant to the Director. The following list of some of the more important of the studies which were started during the first year of the Survey indicates the methods of attack and in a general way the scope of the study:

1. A nationwide survey of all teachers and other professional workers in the public school systems in

order to secure needed comparable data upon supply and demand in specific fields and also upon the types and amount of education possessed by teachers in the public schools.

2. A study of the curricula of normal schools and teachers colleges analyzing courses offered, curricular patterns and describing better practices and interesting innovations in the preparation of teachers.

3. A similar study of the curricula of liberal arts colleges and universities some of whose students go into teaching.

4. A study of the education, experience and professional attitudes of the faculties of higher educational institutions.

5. A study of the laboratory and practice teaching facilities of normal schools, teachers colleges, colleges and universities.

6. The preparation of a complete, annotated bibliography for the field of teacher education in the United States.

7. The history of the education of teachers in the United States.

8. A study of the reading interests on current problems of different groups of teachers.

9. A study of the library facilities of normal schools, teachers colleges and universities.

10. An analysis of the problems of in-service education of teachers.

11. The assembling and developing of more accurate measures for teaching merit or of the qualities which contribute to teaching success in order to submit some of the controversial issues in this field to more quantitative measurement and if possible to controlled experimentation.

In order that significant findings may be made available as soon as possible, it is planned to release preliminary reports from time to time through *School Life* the official publication of the Office of Education.

A Demonstration Teachers College.—Teachers College, Columbia University, contemplates the establishment of a Demonstration and Experimental Teachers College in the

fall of 1932. This new institution is deliberately intended to break a new way in teacher education and thus provide facilities for observation, experimentation, demonstration, and practice of college teaching in the field of professional education of teachers. An endeavor will be made to discover and develop new methods in the field of teacher education. There is a definite intention of avoiding in this new undertaking duplication of present procedures. The curriculum will make no attempt to follow either traditional or radical patterns but will strike out with the consciousness of an urgent need of teachers to be developed and educated far beyond any of our present standards. According to present plans the College will be opened with a Freshman class of approximately 100 students and a Junior class with the same number. All of these students will be without professional experience. The student personnel will be thus built up gradually until the enrollment is completed. The student body will be restricted to five hundred or less, depending upon circumstances. Admission will be competitive.

Teacher Demand and Supply.—

The National Education Association has recently published (November, 1931) a research bulletin entitled *Teacher Demand and Supply* which seeks to answer some of the many questions relating to teacher demand and supply. Its chief contribution is that it demonstrates clearly the need for thorough and continuous study in this field. The resources at the disposal of the committee which had the investigation in charge did not make possible a satisfactory study of the problem. Without doubt there is a serious surplus of teachers. It is also true, however, that thousands of persons are entering the teaching profession each year who are not properly qualified, while more thousands with acceptable qualifications are unable to secure employment. Viewed from any angle, too many persons are being trained for teaching. Teacher-certificating agencies and teacher-training agencies must cooperate to raise requirements for admission to teaching and to restrict the number being prepared for teaching to a point where this number will more nearly approximate the demand for teachers.

DEMOCRACY OF AMERICAN HIGH SCHOOL CHALLENGED

By L. H. DENNIS

DEPUTY SUPERINTENDENT OF PENNSYLVANIA DEPARTMENT OF PUBLIC INSTRUCTION

Free Public Education.—The American people are engaged in an educational undertaking never before tried by any nation. In keeping with the principles upon which our Nation was founded, we have committed ourselves to the great task of providing free public education to the masses of adolescent youth. Our high schools are not to be selective institutions operated for the relatively few who are planning to prepare themselves for professional pursuits. Rather they are to be service institutions for all who desire to be better prepared for the

occupations or vocations of their choice.

Expansion Problems.—As yet we have made only a good beginning in meeting the difficult problems of this program. We are just beginning to catch up with the building situation caused by the rapid and substantial increases in high school enrollments. While the past two decades have been marked by these increases and efforts to meet them, the next fifteen years will witness a remarkable expansion in the variety and type of educational opportunities to be offered in the high schools.

Student Attitude.—Vocational training has become respectable. The vocational class is now no longer the dumping ground for misfits and behavior problem pupils. Many of the brightest high school students are selecting vocational training opportunities. It is not generally appreciated that, including our commercial students, over one-half of the high school student body is now receiving vocational training. When the variety of vocational training opportunities is further expanded a still larger percentage of students will select vocational curricula.

Public Support of Program.—Too many students are enrolled in commercial courses. This is due quite largely to the limited vocational training opportunities available for other vocations. At the entrance to the English Industrial Exposition at Wembley in England a few years ago, there was displayed the following significant statement: "Unless we believe that the skilled manual trades are occupations for educated men and women, our ideal of a widely educated people must be abandoned." Moral approval and public support and sanction are now given to our public vocational education program.

Retraining of Workers.—The rapid and drastic changes in industry and the development of new occupations unheard of twenty years ago involve the rather sudden shifting of workers. These workers, many of

them, need retraining in order that they may make their occupational transfers quickly and with efficiency.

Juvenile Employment Problem.—The unemployment situation brings out into sharp relief the necessity for a better understanding of the problems of juvenile employment. Many believe that the period of public education on a compulsory basis should be extended. If we are to compel our youth to remain in school longer we are surely under the absolute necessity of making the schools worth while. Vocational and technical training opportunities must be provided. The development and expansion of this type of education will be one of the outstanding features of the next ten years.

Federal aid under the Smith-Hughes and George-Reed Laws has stimulated a sound and permanent program of vocational education. As a nation, we have made an excellent beginning in the development of a program of practical education. This Federal aid must be continued and extended at least until such time as the various states are in a position to support this program. We have put our hands to the plow and must not turn back.

The following articles dealing with various phases of the vocational education program in America will make clearer the beginnings of America's comprehensive program of training for vocational efficiency.

DEVELOPMENT OF TRADE AND INDUSTRIAL EDUCATION

By C. M. MILLER

PRESIDENT, AMERICAN VOCATIONAL ASSOCIATION

TEACHERS

A program may first be judged by the teachers who carry it on. The administrators have reason to feel proud of the fine group of teachers now in the field. In 1920 there were 4,462 classroom and shop teachers for evening, part-time and all day classes. For each teacher so employed in that year there were nearly three

at work in 1930. We find, too, that these three have a better preparation for teaching due to careful teacher training. On the other hand trade experience requirements are the same or higher than years ago. A tendency exists for any body of teachers, even though scattered over large parts of the country, to standardize methods of teaching and teaching

content. It is gratifying that trade and industrial teachers as a rule are successfully resisting this tendency. We feel sure that they will continue to teach the trade skills and related work to fit the demands of their own locality.

TEACHING CONTENT

With better preparation they have developed a teaching content more thorough than that of even five years ago. Methods of organization of material have been developed in this field which have been adopted by educators in all fields. One has but to examine the vocational book catalogues of this year and compare them with 1925 to see that the teachers we have today have helped to develop a much richer teaching content for use in shops and classrooms. At the same time it is very practical and closely parallels the industries. In this, the second point on which we judge a program, we feel there has been real progress. As organizers of teaching content, the 11,000 trade teachers will not rest content until the organized instruction material of 1935 shall be a model of its kind.

SHOPS AND EQUIPMENT

Shops, equipped as industry is equipped, are absolutely essential for effective instruction along trade lines. Great improvement in this respect has been made over the ten-year period. The tremendous vocational building programs of our country is an assurance of this. On this, the third point for judgment, there has been continued progress.

PLACEMENT AND FOLLOW-UP

The fourth point on which we may judge the progress made is vocational placement which has been given increased emphasis during the ten-year period. Together with other divisions of vocational education, agriculture and home making, the vocational schools are almost the only ones in the educational field which attempt systematic placement and follow-up of the product of its schools and classes. In this respect, a service is performed to the youth trained,

and the instructors who must change their methods from time to time to make the product acceptable to industry. Placement and follow-up will be continued on even a larger scale during the next ten years.

ENROLLMENT

Day Trade Classes.—Soil is judged by the height of the plant which is grown upon it. For the fifth point, therefore, we must investigate the growth of enrollment of trade and industrial schools and classes, considering each type of work as reported to us by the Federal Board for Vocational Education. In 1920 over 21,000 were learning trades in day trade classes. These young men and women, if housed together, would make a fair size city, directed by over 1,000 teachers in charge of their instruction; not every large classroom space, but a great group of shops would be included in this imaginary city. In 1925, there were two young men or women at bench, machine or laboratory table for each one five years before! Last year, over 71,000 young men and women, in the care of over 3,000 teachers, were in shops and class rooms learning trades. This is three times the number enrolled ten years ago, enough to populate a fair size city, such as Troy. Judging by the growth of day trade enrollment, the trade and industrial soil has proved fertile. Just what growth we may expect in the next five or ten years depends upon variables outside as well as inside the educational field. Without doubt, vocational education will meet whatever demands are placed upon it.

Trade Extension Part-time Classes.—In 1920 over 17,000 young men and women were returning to school for a few hours each week to learn more of their trade. In ten years an additional 30,000 young factory operatives have returned to school for longer or shorter periods. For each one formerly coming to school, there are now nearly three. Part-time instruction never is profitable when factories will treble the

inconveniences attendant upon such a program of part-time instruction. If manufacture continues to increase in specialization we may look for an even greater enrollment in trade extension part-time classes in the years to come.

Trade and Industrial Evening Classes.—Vigorous growth is shown in this type of work. Imagine every man, woman and child in such cities as Pittsfield, Mass.; Bay City, Mich.; or Elmira, N. Y. in evening classes. This is a fair measure of the enrollment in 1920 (48,354). Five years later, for every man or woman attending evening classes in 1920 there was another seated in the classroom or working in the evening school shop beside him. Five years later in 1930 there were three new ones added with enrollment of 1920. Four times as many were enrolled in 1930 as in 1920. A difficult problem of instruction is that of women in evening classes. The country as a whole seems to be solving this problem for there are seven times as many women in classes in 1930 as ten years before. A total of 165,387 men and women are each investing up to a possible 100 hours each year, many of them over a long period of years. If they should sell these hours for one year at an average of 50 cents per hour, it would amount to \$8,250,000, while the combined expenditure by city, state and nation for all types of trade and industrial evening classes is considered worthwhile by those attending. Without doubt evening school enrollment will continue to grow. The pressure of modern business would produce growth even if the teachers and organizers of this type of instruction did nothing to increase their effectiveness. The combined effect of these forces will produce a tremendous demand in the years to come.

General Continuation Classes.—In 1920 almost 100,000 young folks were enrolled in these classes. It would require 20,000 automobiles to transport them to school all at one time and the parade would be nearly 60 miles long. Such a parade of 1930 enrollment would need 67,000 auto-

mobiles in line. This enrollment (334,549) is greater than the population of Rochester, N. Y. and nearly equal to the combined population of Akron and Canton, Ohio. Dr. Cooley of the Milwaukee Vocational School has made an investigation of the earnings of the Part-Times General Continuation boys and girls under his care. He reports that 13,000 of them earned a total of \$6,000,000 a year. If a similar efficiency can be shown on that basis, the enrollment in these classes throughout the nation would require a total of over \$154,000,000, nearly 19 times as much as was spent on the entire trade and industrial program by city, state and nation. Both by numbers enrolled and by earning power, we have proof that the soil of vocational education is productive and fruitful.

CONCLUSIONS

With such results it would seem that trade and industrial education programs are adequate. Upon this past Thomas H. Quigley, of Georgia school of Technology, at a House Committee Hearing upon the Capper-Reed Bill in 1930 said: "While the ——— people enrolled in Federally aided trade and industrial classes is an impressive tribute to the wisdom of the Congress in passing the Smith-Hughes Act yet ——— the juvenile workers enrolled in part-time classes represents but 9.2% of the four million young wage earners each year to whom such training should be made available; and the ——— adults represent but 0.5% of our approximately 25 million adult wage earners. A far greater proportion of these could be reached and served ——— if funds were available." From these statistics, it is clear that the teachers are efficient, effective and content, on well-equipped shops and laboratories. Employers cooperate, and the youth of the land in ever increasing numbers come for instruction. The limiting factor of the program would seem to be the amount of state and Federal funds which may be appropriated and used to carry on the ever expanding program.

VOCATIONAL EDUCATION IN AN INDUSTRIAL CENTER

BY FRANCIS H. WING

DEPUTY SUPERINTENDENT OF VOCATIONAL EDUCATION, BUFFALO, NEW YORK

Effect of the Depression.—Vocational education in cosmopolitan industrial centers has been challenged throughout 1931 by the economic depression. School administrators, forced to defend their budgets from drastic cuts threatened in accordance with a consistent policy of retrenchment, are drafted in the general mobilization to utilize the leisure of the unemployed in extension courses. Counseling service must be provided and, in cooperation with other agencies, intelligent attempts at placement must be maintained.

Training Courses.—Meanwhile, great numbers of young persons, who are unable to secure employment, are thronging the schools, and must be given such preparation as they require to fit them for the renewal of industrial activity which is expected in the near future. In communities where children are kept in school until they are seventeen years of age, preemployment vocational courses from two to four years in length make the extended school attendance profitable for those who will go to work immediately after leaving high school. Supplementing these courses, a program of apprentice training, on a part-time day or an evening basis, preferably compulsory, will carry the youths safely over the break between the school shop and the commercial shop and lead them into the postemployment courses for journeymen which workers in every cosmopolitan industrial center have a right to demand of the educational authorities.

Program Adjustment.—Our economic life, for which vocational education prepares, is dynamic. The vocational education program must be equally dynamic, constantly adjusting itself to changing conditions. The vocational teacher, under supervision, is required not only to organize but also constantly to reorganize

his courses of study. He must prepare his text material and keep it up-to-date through constant study of the changes in industry affecting his work.

Obligations of Administrators.—Likewise, administrators of vocational education must study local industrial activities continuously so as to know, among other things, the nature, number, and size of industrial establishments; numbers and types of workers in each industry, and the absorption rate for new recruits; the needs of present employees for additional skills and technical knowledge, together with resultant employment security, and promotional possibilities; current industrial developments and trends of change, as well as the nature of industrial processes, methods, and duties of skilled workers.

Functional Needs.—Working relationships with employers, executives, and labor unions must be maintained; cooperative relations with the educational executives and teaching staffs of all the schools of the city established and cultivated; sound plans for vocational training evolved; adequate buildings, equipment and supplies provided; qualifications of personnel determined; cooperation of parents and the general public must be wooed and won. In short, vocational education must function effectively as a coordinating unit between the social, economic, and educational needs of the people and the industrial and occupational requirements of the city.

Industrial Contacts.—Thoughtful educators are questioning what may be the function of vocational education in stabilizing industrial conditions during the fat years so that, when the lean years come, there may be less occupational upset. They are looking ahead with a view to readjusting vocational education to meet

new local conditions growing out of the hoped-for revival of prosperity. These efforts, like those being put forth in the way of rendering emergency service to the unemployed, will be assured of success in proportion as the schools maintain close and continuous contact with local industrial conditions in every vocation for which they offer training; to the end that every worker in a cosmopolitan industrial center may find vocational education suited to his individual needs and available at every stage in his progress from pre-apprentice to master craftsman.

HOME MAKING EDUCATION

BY GENEVIEVE FISHER.

DEAN, HOME ECONOMICS DIVISION, IOWA STATE COLLEGE

Public Funds.—Education for homemaking which has received Federal Funds under the Smith-Hughes Act since 1917, has seen its largest development in small towns and rural communities. According to the report published by the Federal Board for Vocational Education (1930), 95 per cent of the all-day classes, 46 per cent of the part-time classes, and 57 per cent of classes for adults were in centers with populations of less than 25,000. The George-Reed Act (1929) has made available additional funds for homemaking education. These funds may be used for the salaries of homemaking teachers in all-day, part-time, and evening classes, and for the salaries of both state and local supervisors. Under the provisions of this act, a more flexible program of work is possible than was possible under the Smith-Hughes Act. States have pretty generally used the new funds to promote types of work for which the funds from the earlier act were insufficient.

Interchange of Classes.—All-day schools which have instruction in both homemaking and agriculture, show an increasing tendency for interchange of classes. Short units in nutrition, family relations, clothing selection, and home management including household equipment, may be given to the boys while the girls receive work in gardening, floriculture, home sanitation, or poultry raising. Joint evening schools are proving

mutually helpful to men and women in solving such problems as the farm food supply, the year-round garden, home improvement, and family health.

Community Programs.—Joint community programs of work in agriculture and homemaking have been growing in favor especially in the southern and western states. Family-and-home surveys are made by the vocational schools to secure facts upon which to plan the community project. These projects enlist the help of fathers and mothers in the adult classes and result in such community wide-spread improvements as home sanitation, drainage, screening, general repairs, home protection, and clean-up campaigns.

Teacher Training.—In the preparation of homemaking teachers, emphasis has been put upon problems of home management, family relations, and child development. Increasing provision is being made for actual experience with children in connection with these courses. Such contacts are secured by having young children in the home management houses where students in training reside for a period of time, taking charge of the management of the house and the care of the small child. Other opportunities for experience with young children is afforded in nursery schools maintained by an increasing number of teacher training institutions; by the use of playgrounds during summer sessions;

through nutrition and health clinics; and through the observations of children in normal homes.

Needs of Wage-Earning Women.

—The findings of the White House Conference on Child Health and Protection (1930) emphasized the importance of good homes in safeguarding the health and proper rearing of children. The increasing number of women who are and must continue to be both homemakers and wage earners makes difficult the problem of guarding the health of families and maintaining standards of home life conducive to wholesome living. It is generally conceded

that girls in wage-earning pursuits marry younger than other girls and continue their wage-earning in larger numbers. The hope of giving this group homemaking instruction lies in widely distributed classes organized into short unit courses and given at times convenient for employed women. Although the number of classes in homemaking available through Federal and state aid has shown rapid growth in the past decade, the vast numbers for whom such classes are not available makes it urgent that more funds be appropriated for the support of homemaking instruction.

VOCATIONAL EDUCATION AND UNEMPLOYMENT IN WISCONSIN

By GEORGE P. HAMBRECHT

STATE DIRECTOR OF VOCATIONAL EDUCATION, WISCONSIN

Enrolment.—One of the most striking developments in the field of vocational education as illustrated by Wisconsin is the great increase in school attendance of adults who attend day or evening classes voluntarily. Ten years ago the day school enrolment of young workers and the evening school enrolment of adults were practically the same,—about 24,500. In the year 1930-1931, the part-time day school enrolment of young workers was 32,928; while the evening school enrolment of adults had risen to 54,600.

Itinerant Teaching.—The effectiveness of the training program for both young and adult workers has been greatly increased by the employment of competent instructors for itinerant teaching in certain trades and occupations. Each itinerant instructor has day classes for apprentices and evening classes for journeymen in four or five neighboring cities which form a trade-teaching circuit. Circuits have been organized in barber training, electrical work, foundry work, painting and

decorating, plumbing, pulp and paper and other fields.

Combating Unemployment.

—The State Board of Vocational Education in Wisconsin is cooperating with other departments in developing a state-wide program to combat unemployment. It is preparing to render, and in some cities is rendering, definite service to the unemployed. The intention is to deal with them, not *en masse*, but individually in each community, as the Rehabilitation Division of the State Board of Vocational Education now deals with those who are physically handicapped. Careful industrial surveys are being made in the various vocational school communities, to serve as a basis for counseling, for try-out courses and for choice by the worker of the field in which he will receive training. In one vocational school city, the welfare authorities make vocational school attendance a condition of financial aid in cases where training is obviously desirable.

Agricultural and Home Economics Classes.—In vocational agri-

culture and rural home economics, day and evening classes for young and adult workers are constantly growing more popular. The chief limitation upon their expansion is lack of funds.

FUTURE FARMERS OF AMERICA

By W. A. ROSS

NATIONAL EXECUTIVE SECRETARY, FUTURE FARMERS OF AMERICA

DEVELOPMENT OF VOCATIONAL AGRICULTURE

Since 1917, when vocational agriculture was first established in secondary schools throughout America, there has been an existing need for a student organization which would provide opportunity for boy-initiated and boy-directed activities of an agricultural character for those participating in such instruction. So keenly was this need felt in certain states and local communities between 1917 and 1928, that many local organizations as well as a few state organizations of vocational agricultural students were formed. In Virginia, New Jersey, New York, North Carolina, Tennessee, Ohio, Utah and California, for example, considerable progress was made with state organizations. Local and state organizations of vocational agricultural students accomplished some splendid things and the progress made by them paved the way for the later development on a national basis. However, local and state organizations, operating more or less independently, were limited as to opportunities for contact and accomplishment because there was no central organization to unify purposes, draw together membership interests and enlarge the scope of activity. But the idea was right and the time came for the formation of a great national organization of the boys studying vocational agriculture which would weld their interests as well as provide greater incentive and opportunity for individual development and group action. Then all boys studying vocational agriculture could act under one name, one emblem, one creed, and a common purpose.

ORGANIZATION AND GROWTH

In November of 1928, the Future Farmers of America organization was launched at Kansas City, Mo. The constitution adopted was patterned closely after that of the "Future Farmers of Virginia" and the pioneer experiences of this state vocational agricultural organization, along with helpful material developed in several other states, served as a foundation upon which the new structure, The Future Farmers of America, was erected.

The F. F. A. movement, as it is commonly known, has met with marked favor throughout the entire country and the growth in membership as well as the pioneer accomplishments have been gratifying to all who are concerned with the welfare of farm youth and the advancement of a more profitable agriculture. The Future Farmers of America, drew together the forces of farm boys of high school age who were interested in preparing for farming as a vocation, and who were therefore thinking and working along similar lines. It came into existence because boys studying vocational agriculture needed and wanted their own national organization which would provide instructional and recreational advantages.

Members of the Future Farmers of America are of the adolescent age and their organization provides an opportunity for taking advantage of their natural instincts and tendencies which manifest themselves in the group or "gang" spirit, the desire for action, the eagerness to do and be, and the admiration for competent, whole-hearted leadership. Through the activities of the F. F. A. the group

FUTURE FARMERS OF AMERICA

spirit is fostered, rural leaders are developed, individual talents discovered, and experiences provided in the art of working well together for a common good according to accepted business practices and procedures. A close relationship is thus brought about among farm boys studying vocational agriculture, and the members of the F. F. A. have a splendid opportunity to develop creative and constructive thinking; to learn to deal effectively with themselves and with others as they develop business ability and wholesome social relationships, all in the natural setting of their own organization with its actual problems.

Cooperative effort is the watchword of today and the hope of the future, especially in the field of agriculture. Considerable difficulty has always been encountered by agricultural workers in securing cooperative effort among adults who have fixed habits of thought and action, but the farm youth who is in the malleable, formative stage of life can be more easily taught cooperation in principle and practice. Successful cooperative effort in agriculture in the future largely depends upon how successfully these "Future Farmers" learn to cooperate, and this can best be taught through natural experiences in the close relationship of organized endeavor.

F. F. A. MEMBERSHIPS

Within the F. F. A. organization are found active, associate, and honorary types of memberships and there are four grades or degrees of active membership including (1) "Green-hand"; (2) "Future Farmer"; (3) "State Farmer"; and (4) "American Farmer." Membership advancement is based on worthwhile achievement and specific levels of attainment are set up for each degree. The local chapters determine the worthiness of the individual for advancement to the first two degrees; the State Association passes on the candidates for the third degree, while the National Organization passes on the candidates

for the fourth degree. There are officers in each unit of the organization as well as standard procedures for conducting the affairs of the organization. The teacher of vocational agriculture acts as the local chapter adviser.

ACTIVITIES AND ACHIEVEMENTS

All activities and achievements of the Future Farmers of America are the result of definite objectives and goals set up in local, state, and National programs of work, and there is a close relationship existing between the programs. All members actually participate in a definite constructive agricultural program. They make arrangements for financing their own farming operations; they buy and sell cooperatively; they study agricultural problems together; they learn to speak in public and to conduct agricultural meetings properly. The F. F. A. fosters in the individual members the spirit of industry, cooperation, and achievement, and encourages patriotism, civic responsibility, and faith in agriculture. The organization typifies the American spirit and embodies the fundamentals of a true democracy because each member has a voice in the activities undertaken and there is individual responsibility, but team work and cooperation are required to accomplish the undertakings appearing in programs of work. Splendid business training and agricultural instruction thus accrues to F. F. A. members. They are interested, red-blooded American farm boys who crave action and practical first-hand, agricultural experience, and the F. F. A. provides an outlet for constructive effort. Although only three years old the F. F. A. has already shown a marked influence upon the improvement and development of supervised farm practice programs and in the actual establishment of worthy youths in the occupation of farming.

AFFILIATED STATE ASSOCIATIONS

In January of 1930, fourteen months after the founding of the or-

ganization, thirty-five states and the Territory of Hawaii had formed state associations having at that time an active membership of some thirty thousand boys. In June of 1931, eighteen months later, the number of affiliated state associations had increased to forty-seven and the active membership totaled 56,718 boys. Such a growth indicates the importance of the F. F. A. in the vocational agricultural program and the widespread interest which is being manifested in the organization.

THE F. F. A. CREED

The attitude of each member is reflected in the Creed of the organization which is as follows:

"I believe in the future of farming, with a faith born not of words but of deeds—achievements won by the present and past generations of farmers; in the promise of better days through better ways, even as the better things we now enjoy have come up to use from the struggles of former years.

"I believe that to live and work on a good farm is pleasant as well as

challenging; for I know the joys and discomforts of farm life and hold an inborn fondness for those associations which, even in hours of discouragement, I can not deny.

"I believe in leadership from ourselves and respect from others. I believe in my own ability to work efficiently and to think clearly, with such knowledge and skill as I can secure, and in the ability of organized farmers to serve our own and the public interest in marketing the product of our toil.

"I believe in less dependence on begging and more power in bargaining; in the life abundant and enough honest wealth to help make it so for others as well as myself; in less need for charity and more of it when needed; in being happy myself and playing square with those whose happiness depends upon me.

"I believe that rural America can and will hold true to the best traditions in our national life and that I can exert an influence in my home and community which will stand solid for my part in that inspiring task."

ADULT EDUCATION

By MARY L. ELY

AMERICAN ASSOCIATION FOR ADULT EDUCATION

GENERAL

Adult education, as an organized movement is less than ten years old in this country, but has, nevertheless, become an established part of our educational scheme. The press, the pulpit, the public schools, and our extensive system of community organizations have caught the idea that learning is a continuous and lifelong process, and have joined with the earlier adult education agencies—for the most part privately supported—in the promotion of the movement. The phenomenal spread of the idea is attributable, to some extent, to the results of experiments made by Edward

L. Thorndike and his associates at Teachers College, Columbia University. Dr. Thorndike's findings convincingly disprove the widely accepted belief that adults, past twenty-five years of age, are unable to acquire new knowledge or new skills; and show moreover that the rate of decline in learning ability is encouragingly slow,—roughly, one per cent per year to the age of forty-five or fifty. The vitality of the adult education movement is manifesting itself not only through growth in the number and variety of educational opportunities for men and women of mature years, but also through the influence

exerted by the movement upon educational methods and materials in general. Already, far-reaching revisions of the curricula of elementary, secondary, and collegiate institutions are being undertaken. The feverish task of attempting to cram into a child's head facts enough to last him for a lifetime has been abandoned.

DEFINITION OF ADULT EDUCATION

An analysis made during this last year of one day's yield of newspaper clippings, dealing with adult education, gave a record of more than twenty varieties of activity, ranging from class work recognized for academic credit to luncheon-club discussions of current problems, and from vocational classes for retraining the unemployed to illustrated lectures on modern art. It is because the American definition of adult education is still in the making, widening in scope every year, that no exact formulation of it has yet been possible. In fact, the only definitions that have gained acceptance have been those that defined adult education not in terms of method and content but in the light of its ultimate aims and purposes. In his *The Meaning of a Liberal Education*, Everett Dean Martin says: "It is sought to make of adult education something which will broaden the interests and sympathies of people regardless of their daily occupation—or along with it—to lift men's thought out of the monotony and drudgery which are the common lot, to free the mind from servitude and herd opinion, to train habits of judgment and of appreciation of value, to carry on the struggle for human excellence in our day and generation, to temper passion with wisdom, to dispel prejudice by better knowledge of self, to enlist all men in the measure that they have capacity for it, in the achievement of civilization."

HISTORY OF THE MOVEMENT

Adult education is not new in America. It is not a far cry to trace

its origins to the New England town meeting of the seventeenth century. The lyceum movement of the early nineteenth century, which received the backing of men of letters like Emerson, Lowell, Holmes, and Thoreau, was an adult education movement. Later came chautauquas, university extension, correspondence schools, and work for the foreign-born. In 1924 the Carnegie Corporation of New York made an inquiry into existing forms of adult education in this country, and as one result of the inquiry, there was established the American Association for Adult Education, which has headquarters in New York. The Association acts as a clearing house; it is not an operating organization. Its whole effort is directed toward supplying a medium of exchange for teachers and administrators who are in close contact with adult students. The Association publishes a quarterly journal, and from time to time distributes reports and other publications of interest to its membership. It holds annual meetings, attended not only by members but by the interested public.

AGENCIES PROMOTING ADULT EDUCATION

Among the agencies that are actively promoting adult education may be listed the following: The public schools; libraries; museums; extension services of departments of the Federal Government, and of colleges, universities, and professional schools; corporation schools; workers' schools and classes; fraternal and religious associations; child-study and parent-education groups; and an almost infinite variety of clubs and other organizations. Developments in which foreign influences are strong include people's colleges and folk schools, borrowed from Denmark and adapted to American conditions; study circles copied from those of Sweden; and labor schools and other workers' education activities inspired by the English work in these fields. The importance of radio broadcasting as a medium for adult

education is daily receiving new recognition.

ADULT EDUCATION AND UNEMPLOYMENT

Special Classes.—Public attention during 1931 has centered largely upon the economic depression and the resultant widespread unemployment. To meet the present emergency, special day and night classes for unemployed workers have been provided by public schools and private institutions in many cities. At the same time, an attempt has been made to deal with the whole problem in a more constructive way by facing squarely the question whether adult education techniques can make any direct contribution toward the elimination of existing unemployment or toward the prevention of future unemployment.

Three-Fold Program.—In November, 1930 a staff operating from the University of Minnesota took a census of the unemployed in Minneapolis, St. Paul, and Duluth. This was the beginning of an experiment that is now being carried on in Minnesota to determine the extent and causes of unemployment; to suggest cures and to put them in operation; and, finally, to seek and provide employment for the men and women under observation. The responsibility for this threefold program is in the hands of a single committee, made up of representatives of employees, of employers, of the city governments, of the state at large, and of the University. The experiment is being financed by three foundations.

Conferences.—In December, 1930, the American Association for Adult Education invited a group of educators and other persons particularly interested in educational problems to attend a conference on unemployment. In preparation for the meeting six well-known economists were asked to submit papers stating their views as to the magnitude and character of the unemployment problem. These papers, together with a transcript of the discussions that took place at the

meeting, have been published by the Association. In August, 1931, a two-day World Conference on Adult Education in Relation to Unemployment met in Vienna. Four American representatives were in attendance, two of whom delivered addresses.

ADULT EDUCATION BY RADIO

Chicago Meeting.—In no section of the field of adult education has there been greater activity during the last year than in that devoted to radio broadcasting. At the invitation of the U. S. Commissioner of Education, a meeting of educators and broadcasters took place in Chicago in October, 1930, the purpose of the meeting being to consider the possibilities of educational broadcasting. A resolution was passed by the delegates recommending that Congress enact legislation allocating to educational programs fifteen per cent of all radio broadcasting channels available to the United States. The meeting also provided for the formation of a committee to make plans and recommendations for promoting and protecting educational broadcasting. This committee, known as the National Committee on Education by Radio, was organized in the closing days of 1930. Money for the support of a five-year program has been granted by the Payne Fund of New York.

Annual Assembly in New York.—In June, 1931, the National Advisory Council on Radio in Education (not to be confused with the committee mentioned above), which was organized in the spring of 1930 as a result of a study made by the American Association for Adult Education, held its First Annual Assembly in New York City. The assembly was the occasion for the broadcasting of the first of the "Men of America" radio lectures, which together with a series of lectures on psychology and another series on economics are being sponsored by the Council.

Ohio Radio Institute.—The second annual session of the Ohio Radio Institute was held at Ohio State Uni-

versity, Columbus, in June, for the discussion of questions connected with the use of radio for education. The Proceedings of both the 1930 and 1931 Ohio Institutes are available in printed form.

International Conference.—In August, 1931 the World Association for Adult Education held in Vienna an international conference on educational broadcasting. There were five American delegates in attendance, one of whom acted as chairman of the meeting.

Voters' Service Lectures.—In order to test the effectiveness of broadcast lectures, the League of Women Voters has been making a study of groups of listeners organized in connection with their Voters' Service lectures on political topics. The results of this study are to be published.

ALUMNI EDUCATION

The provision by colleges and universities of educational programs for their graduates has met with such hearty response that several additional colleges offered such programs during the commencement season last June. Among them were Wells, Berea, Beloit, and Colgate. The Wharton School of Finance and Commerce of the University of Pennsylvania held its second alumni institute in March; Lafayette College held its third, and Michigan University its second alumni session in June.

SUMMER SCHOOLS

During June and July summer schools for women workers were in session at Bryn Mawr, Barnard College, and at Arden, North Carolina; a workers' school for both men and women was held at the University of Wisconsin. Initial sessions of adult education summer schools were held during the summer of 1931 at Clemson College, South Carolina, where an opportunity school was conducted for men and women who had never gone beyond the seventh grade of the elementary school, and at Whitford, Pennsylvania, where a School for Adults was sponsored by the Chester

County (Pennsylvania) Health and Welfare Council.

MEETINGS

The Sixth Annual Meeting of the American Association for Adult Education was held in New York City in May; an adult education conference was held in St. Paul, also in May. At the meeting of the American Library Association in New Haven in June several sessions were devoted specifically to adult education. The National Education Association, convening at Los Angeles in June, discussed at length the report of its Commission on the Enrichment of Adult Life. The Country Life Association at its meeting at Cornell University in August voted to devote the entire program of its 1932 conference to the subject of rural adult education.

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PURE RESEARCH IN EDUCATIONAL INSTITUTIONS

BY ELBERT VAUGHAN WILLS

EDITOR-IN-CHIEF, U. S. NAVY DEPARTMENT STANDARD STOCK CATALOGUE

THE PLACE OF EDUCATIONAL INSTITUTIONS IN RESEARCH

Research and the Economic Cycle.—The university has been, is, and obviously must remain the instrumentality for training both those who shall guide the preparation of future research workers and the research workers themselves. It is apparent that the law of demand and supply will be operative here to the extent that a period of acceleration in the tempo of economic advance will reflect itself in a demand for applied research in the service of industry which will tend to draw into this field those teachers and investigators whose greatest usefulness would lie in the sphere of basic investigation, to the detriment of pure research and the training of student investigators in research technique. During a period of economic recession such as existed in 1931, it is natural that there should have been instances of curtailment of industrial research. An encouraging feature, on the other hand, was the fact that there were numerous pronouncements indicative of a reliance upon research as a means of reviving and steadying industry which would indicate increased rather than decreased emphasis upon industrial research, pure and applied. In connection with the Thirteenth Exposition of Chemical Industries in New York City in May, for example, Dr. Arthur D. Little stressed the need for research in that field for the purpose of improving products, reducing costs, developing new uses for products, and creating new wants. Similar views were voiced at the annual meeting of the United States Institute for Textile Research, held in November, in the course of which the textile industry was urged to encourage and develop fundamental research in a manner comparable to that being done in the paper, petroleum and steel industries.

Brown University Survey Report.—The relation of university graduate schools to research in general was forcefully set forth in the report of the Brown University Survey Committee, which traced the development of research in that institution from its modest beginnings dealing with problems related to the older established disciplines, through its spread to the professional fields, with constantly growing interrelations. The report pointed out, further, that such growth is not the "result of institutional policies but the inevitable response of institutions to new social situations. Industry and more slowly public policies in many important fields have come to depend directly or indirectly on the labors of researchers trained in graduate schools. As a nation we are reluctantly but inevitably losing something of our faith in the jack-of-all-trades." There was likewise emphasized the obligation of the scholar, "not only to do the research which he feels is his appointed task but in doing it to transmit his spirit and technique to a new generation."

Prohibition Advisory Research Council.—An illustration of the position of the pure research activities of educational institutions as basic to practical applications in the fields of government or industry was afforded by the formation by Federal Prohibition Director Woodcock in May of a Prohibition Advisory Research Council, composed of ten scholars in economics and sociology connected with leading colleges and universities. The purpose was stated to be to afford to directors of research in institutions of higher education "an opportunity to study carefully the subjects proposed by the Advisory Council to ascertain the truth regarding the operation of the Eighteenth Amendment in the field of political science."

COORDINATION OF RESEARCH ACTIVITIES

Human Welfare Group at Yale.

—The year witnessed steady progress in the growth of the Institute of Human Relations, established in 1929, as an important element in the Human Welfare Group at Yale, designed to bring about interdepartmental cooperation in university research and to promote the integration of knowledge relating to problems of human well-being. All investigations dealing with the human organism and with human behavior in its individual or group aspects fall within the purview of the Institute. An announcement of research activities conducted directly by the Institute or in association with it, issued in April, indicated three main groups of topics under investigation: first, those relative to basic facts concerning human and social organisms; second, those dealing with immediate problems of human welfare, such as crime, public health, unemployment, and other matters requiring the cooperation of specialists in numerous fields; third, projects of cooperative research in such fields as law, medicine, religion, education, economics and government. A child-development clinic maintained at Yale for a number of years proved a valuable adjunct of the work of the Institute, as did also special laboratories for cooperative research in psychology and psychiatry and in comparative psychobiology. A new building for the Institute was dedicated in May.

Graduate School of International Affairs at Columbia.—In June, Columbia University was awarded, by decision of the supervising trustees under the will of Edwin B. Parker, of Washington, who died in 1929, an endowment gift of \$2,000,000 for the establishment of a Graduate School of International Affairs. The university appointed a special committee to develop means of coordinating the work of the institution in advanced study and research bearing upon international affairs, and carried on in the past, according to President Butler's statement, "in part through the faculty of political science, in part

through the faculty of business, in part through the faculty of law, and in part through the faculty of education in Teachers College." Integration of advanced training and research in the university's School of Business and its Department of Economics was outlined in the annual report of the dean of the faculties of Political Science, Philosophy, and Pure Science at Columbia, in November.

FELLOWSHIPS AND GRANTS IN AID OF RESEARCH

Their Importance.—It is important that facilities should be provided, by the lightening of the instructional burden on members of college or university staffs engaged in research, and by the provision of grants in aid of significant projects, to enable such undertakings to be brought to completion, and to permit research workers in training to be brought into contact with the stimulating example and influence of such investigators. A fruitful source of research of a high order of excellence is also the graduate student who has received the doctorate, but who, by the grant of a post-doctoral fellowship, is enabled to continue investigations and to bring to bear upon such investigations the technique and enthusiasm engendered by years of study and research. Fellowships and grants in aid are, therefore, most valuable as means of furthering the development of pure research.

The American Council of Learned Societies.—In March, the Committee on Fellowships and Grants of the American Council of Learned Societies announced awards aggregating \$60,000 to 50 scholars. On these grants, 36, ranging in amount from \$100 to \$1,500, a total of about \$20,000 were made to defray expenses of research projects in the humanities. Fourteen research fellowships in the humanities, having a value of about \$40,000, were awarded to mature scholars of substantial achievement and demonstrated aptitude for constructive research designed to aid the advancement of knowledge. The projects involved investigation in the United States, Europe and South

America. At the same time, the appointments of two research fellows were extended.

John Simon Guggenheim Memorial Foundation.—Award of 77 fellowships, totaling \$175,000, was made by the Foundation. The recipients included scholars, writers, artists, musicians and scientists, among them instructors and professors from a number of colleges and universities.

The Heckscher Foundation at Cornell.—In a report issued in January, President Farrand of Cornell summarized the work of the Heckscher Foundation for the Promotion of Research at Cornell University during its first decade. Grants for 192 separate investigations, involving appropriations of \$370,000, were made. No limits were placed upon the fields of research selected by recipients of grants, but in some years the major portion of the available funds was concentrated upon a single field. A number of outstanding research achievements were furthered by these grants, and to the assistance thus rendered President Farrand attributed in large measure the standing of Cornell as a leading research centre.

The Milton Fund and the Clark Bequest at Harvard.—Forty-seven awards for research in 1931-32, involving a total of more than \$60,000, were made to members of the Harvard University faculty from the Milton Fund and the Clark Bequest. The Milton Fund grants are made to members of the instructional staff in aid of research projects in specified fields. The Clark Bequest, available in 1931 for the first time, stipulated that "the income shall be devoted to the encouragement and advancement of original research."

National Research Council.—Aside from grants for scientific research in universities and award of post-doctorate fellowships, grants-in-aid to 33 scholars were made by the Council's Committee on Grant-in-Aid at its meeting in June. Of the recipients of these grants, all except two were connected with colleges or universities.

Social Science Research Council.—Grants aggregating about \$23,000

were made to 33 scholars for the purpose of assisting in the completion of significant research projects in the social sciences. In February, 24 new research fellows, selected from candidates required to be holders of the degree of Ph.D. or its equivalent in other types of training and experience, were appointed for 1931-32, and two extensions of fellowships awarded for 1930-31 were made. The aggregate amount of the stipends carried by these fellowships was \$75,000, the basic grant being \$1,800 for a single and \$2,500 for a married fellow, with additional allotments in the case of dependents, and supplementary allowances, where needed, for travel and other incidental expenses. The second annual award of fellowships to Southern students in the social sciences was made March 30. Seventeen new fellows were appointed for 1931-32 and three renewals of 1930-31 fellowships were allowed. Southern grants-in-aid to scholars to facilitate the completion of significant pieces of social research already under way by Southern social scientists, were also announced. Twenty appointments to Social Science Research Council fellowships in agricultural economics and rural sociology for 1931-32, carrying stipends aggregating \$28,500, were made in March.

Yale University.—Yale University announced in May award of 36 fellowships for advanced research, the recipients having already received the degree of Ph.D. or done equivalent scholarly work. Seven of these awards permit research in foreign countries.

RESEARCH DEVELOPMENTS IN INDIVIDUAL INSTITUTIONS

Columbia.—In May, there was announced the incorporation of the National Institute of Public Administration, with an endowment of \$1,500,000. The Institute was originally the New York Bureau of Municipal Research, founded in 1906. While maintaining an independent corporate existence, the affiliation was designed to coordinate the work of the Institute with that of Columbia University's Department of Municipal Science and

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

Administration, and as such represented another step in the coordination of training and research activities. On July 1, 1931, an agreement became effective whereby the New York Post Graduate Medical School and Hospital became the Post Graduate School of Medicine of Columbia University.

Tungsten Plating Process.—The discovery, by Professor Colin G. Fink, of Columbia University, of an electroplating process for tungsten plating, was announced in May. This discovery marked the successful culmination of a project which had engaged the attention of research workers in the field of chemistry for more than half a century. It produced a metal immune not only to tarnishing but also to acid discoloration.

Chemical Element No. 87.—In October, Cornell University announced the discovery of Chemical Element No. 87 in the course of chemical research in progress at that institution.

Paper Chemistry at Lawrence College.—A new building for the Institute of Paper Chemistry at Lawrence College was dedicated in September. While affiliated with a liberal arts college, the Institute was established as a graduate school to be devoted to the interests of research related to the pulp and paper indus-

try. While the first of its kind in the United States, it was patterned after the Darmstadt school in Germany.

University of Michigan.—The University of Michigan Law School completed during the year a legal research library as a part of a program for the encouragement of a corporate life in the school by bringing the students in training into vital contact with the development of law and with legal practice. This program was made possible by a gift of about \$12,000,000 from the estate of William W. Cook. The research library, a part of the law quadrangle ultimately to be provided, had as the motivating aim in its development, the cultivation of the research spirit in the teaching and study of law.

University of Wisconsin.—The Wisconsin Alumni Research Foundation presented to the Regents of the University of Wisconsin a report covering the five years following its establishment in November, 1925. It was founded to secure patent protection for scientific discoveries and inventions by members of the university staff, the income from such patents being used for the support of research for the benefit of the public. The research program of the Foundation for 1931-32 involved nine research projects, the grants therefor aggregating \$21,500.

COGNATE SOCIETIES AND RESEARCH INSTITUTIONS

(For further information, the reader may address the following organizations)

GENERAL

AMERICAN ASSN. FOR ADULT EDUCATION, 41 E. 42nd St., New York City.

AMERICAN COUNCIL ON EDUCATION, 26 Jackson Place, Washington, D. C.

AMERICAN COUNCIL OF LEARNED SOCIETIES, 907 15th St., Washington, D. C.

AMERICAN EDUCATION ASSN., 522 Fifth Ave., New York City.

AMERICAN FEDERATION OF TEACHERS, 327 S. La Salle St., Chicago, Ill.

AMERICAN UNIVERSITY UNION, Columbia University, New York City.

GENERAL EDUCATION BOARD, 61 Broadway, New York City.

NATIONAL ASSN. OF DIRECTORS OF EDUCATIONAL RESEARCH, University of Michigan, Ann Arbor, Mich.

NATIONAL CONGRESS OF PARENTS AND TEACHERS, 1201 16th St., N. W., Washington, D. C.

NATIONAL COUNCIL OF EDUCATION, 200 New Jersey Ave., N. W., Washington, D. C.

NATIONAL EDUCATION ASSN. OF THE U. S., 1201 16th St., N. W., Washington, D. C.

NATIONAL HOME AND SCHOOL ASSN.,

- INC., 17 E. 42nd St., New York City.
- NATIONAL RESEARCH COUNCIL, DIVISION OF EDUCATIONAL RELATIONS, B and 21st St., N. W., Washington, D. C.
- NATIONAL SOCIETY FOR THE STUDY OF EDUCATION, 19 Putnam St., Danvers, Mass.
- PUBLIC EDUCATION ASSN., 8 W. 40th St., New York City.
- NATIONAL ASSN. OF HIGH SCHOOL SUPERVISORS AND INSPECTORS, 1016 Michigan Ave., Ann Arbor, Mich.
- NATIONAL ASSN. OF SECONDARY SCHOOL PRINCIPALS, Oak Park, Ill.
- NATIONAL KINDERGARTEN ASSN., 8 W. 40th St., New York City.
- Y. M. C. A. EDUCATIONAL SECRETARIES ASSN., 65 Hanson Place, Brooklyn.

INTERNATIONAL

- ASSN. OF AMERICAN RHODES SCHOLARS, 2 W. 45th St., New York City.
- INSTITUTE OF INTERNATIONAL EDUCATION, 2 W. 45th St., New York City.
- INTERNATIONAL COUNCIL FOR THE EDUCATION OF EXCEPTIONAL CHILDREN, 100 E. Grand River Ave., Detroit, Mich.
- INTERNATIONAL COUNCIL OF RELIGIOUS EDUCATION, 100 E. 42nd St., New York City.
- PAN-AMERICAN EDUCATIONAL CONGRESS, Universidad de Chile, Santiago, Chile.

TEACHERS

- AMERICAN FEDERATION OF TEACHERS, 327 S. La Salle St., Chicago, Ill.
- CARNEGIE FOUNDATION FOR THE ADVANCEMENT OF TEACHING, 522 Fifth Avenue, New York City.
- EDUCATORS ASSN., 303 Fifth Ave., New York City.
- HEAD MASTERS ASSN., 241 W. 77th St., New York City.
- NATIONAL ASSN. OF TEACHERS AGENCIES, 179 Whitehall St., Atlanta, Ga.
- NATIONAL STUDENT FORUM, 2929 Broadway, New York City.
- STUDENTS COOPERATIVE SOCIETY, 565 Fifth Ave., New York City.
- TEACHERS COUNCIL, 500 Fifth Ave., New York City.
- TEACHERS UNION, 70 Fifth Ave., New York City.

SCHOOLS

- AMERICAN SCHOOL CITIZENSHIP LEAGUE, 405 Marlborough St., Boston, Mass.
- FEDERATION FOR CHILD STUDY, 242 W. 76th St., New York City.

COLLEGES AND UNIVERSITIES

- AMERICAN ASSN. OF COLLEGIATE REGISTRARS, University of Pittsburgh, Pittsburgh, Pa.
- AMERICAN ASSN. OF JUNIOR COLLEGES, Central College, Conway, Ark.
- AMERICAN ASSN. OF UNIVERSITY PROFESSORS, Charles River Road, Cambridge, Mass.
- AMERICAN ASSN. OF UNIVERSITY WOMEN, 1634 Eye St., N. W., Washington, D. C.
- AMERICAN SOCIETY FOR THE EXTENSION OF UNIVERSITY TEACHING, 925 Chestnut St., Philadelphia, Pa.
- AMERICAN UNIVERSITY UNION, 2 W. 45th St., New York City.
- ASSN. OF AMERICAN COLLEGES, 111 Fifth Ave., New York City.
- ASSN. OF AMERICAN UNIVERSITIES, University of California, Berkeley, Calif.
- ASSN. FOR COLLEGES FOR NEGRO YOUTH, Shaw University, Charlotte, N. C.
- ASSN. OF LAND GRANT COLLEGES, Iowa State College, Ames, Iowa.
- ASSN. OF URBAN UNIVERSITIES, College of the City of New York, New York City.
- COLLEGE ENTRANCE EXAMINATION BOARD, 431 W. 117th St., New York City.
- NATIONAL ASSN. OF COLLEGES AND UNIVERSITIES, Atlanta, Ga.
- NATIONAL ASSN. OF STATE UNIVERSITIES, Oxford, O.
- NATIONAL UNIVERSITY EXTENSION ASSN. Dept. of Education, State House, Boston, Mass.
- NEW ENGLAND ASSN. OF COLLEGES AND SECONDARY SCHOOLS, Wellesley College, Wellesley, Mass.
- PHI BETA KAPPA, 145 W. 55th St., New York City.

PROFESSIONAL EDUCATION

AMERICAN ASSN. OF TEACHERS COLLEGES, School of Education, Cleveland, O.

AMERICAN BAR ASSN., Section of Legal Education, 209 S. La Salle St., Chicago, Ill.

AMERICAN MEDICAL ASSN., Council on Medical Education and Hospitals, 535 N. Dearborn St., Chicago, Ill.

ASSN. OF AMERICAN LAW SCHOOLS, 62 Law School, Harvard University, Boston, Mass.

ASSN. OF AMERICAN MEDICAL COLLEGES, 25 E. Washington St., Chicago, Ill.

SPECIAL EDUCATION

AMERICAN ASSN. TO PROMOTE TEACHING OF SPEECH TO THE DEAF, 1601 35th St., N. W., Washington, D. C.

AMERICAN CHILD HEALTH ASSN., 370 Seventh Ave., New York City.

AMERICAN HUMANE EDUCATION SOCIETY, 1801 Longwood Ave., Boston, Mass.

AMERICAN PHYSICAL EDUCATION ASSN., Highland Station, Springfield, Mass., Box G.

NATIONAL ASSN. FOR THE DEAF, School for the Deaf, Trenton, N. J.

VOCATIONAL

AMERICAN ASSN. FOR THE ADVANCEMENT OF AGRICULTURAL TEACHING, E. Lansing, Mich.

AMERICAN HOME ECONOMICS ASSN., 41 Eliot Memorial Road, Newtonville, Mass.

AMERICAN VOCATIONAL ASSOCIATION, Department of Public Instruction, Harrisburg, Pa.

BUREAU OF AMERICAN WORKERS' EDUCATION, 416 W. 24th St., New York City.

NATIONAL VOCATIONAL GUIDANCE ASSN., Bureau of Vocational Guidance, Harvard University, Cambridge, Mass.

NEW ENGLAND HOME ECONOMICS ASSN., 41 Eliot Memorial Road, Newtonville, Mass.

TRADE UNION EDUCATION LEAGUE, 26 Union Square, New York City.

NOTE: For additional educational societies consult U. S. OFFICE OF EDUCATION, Washington, D. C.

INDEX

ABBEY, Edwin A., Bequest of, 850
 Abbot, C. G., 101
 Willis, J., 78
 Abyssinia, 61
 Academy of Design, National, Exhibition at, 852
 Accomplishments of Army Personnel, 260-269
 Accounting Office, General, 101
 Acculturation, 795
 Acropolis, Discovery in, 844
 Adams, Charles Francis, 98
 Maude, 865
 Addams, Jane, 16
 Addison's Disease, 761
 Additen, Henrietta, 541, 555
 Adjutant General's Department (See Army)
 Administration, Personnel of the, 92-95
 Tariff, 456-459
 Veteran's Affairs, 276-280
 Administrative Commissions, Federal, 17-23
 Admiralty Jurisdiction, 169-171
 Foreign Suits, 171
 Prohibition, 169, 170
 Shipping, 170, 171
 Adrenal Cortex, 759
 Adult Education, 900-903
 American Association, 902
 Bibliography on, 903
 Definition of, 901
 History of, 901
 International Conference, 903
 Libraries, 837, 838
 Organized Movement, 900
 Program, 902
 Radio in, 902
 Summer Schools for, 903
 Unemployment, 902
 Advertising Signs in District of Columbia, 164
 Aerology, 694, 695
 Aeronautical Board, 289
 Engineering, 494
 Aeronautics (See Aviation)
 Bureau of, 288
 National Advisory Committee for, 101, 495
 Afghanistan, 62
 Africa, Copper Production, 441
 Statistics, 442
 Trade in, 325
 African Travel Books, 810
 Agency Liability, 122
 Agora, 844
 Agricultural Appropriation Act, 399
 Chemistry, 715-718
 Carbohydrates, 715
 Cereals, 717
 Fermentations, 716
 Fruit, 718
 Insectides, 715, 716
 Lignin, 718

Nutrition, 717
 Phytochemistry, 717
 Publications, 718
 Tanning, 716, 717
 Commodities, 307
 Conditions, 398
 Credit, 399
 Experts, 398
 Effect of War on, 398
 Legislation, 399-403
 Marketing, 418-420
 Act, 8
 Production, 418, 419
 Products, Drop in Prices, 418
 Rehabilitation, 10
 Service, Foreign, 419
 Vocational, 899, 900
 Agriculture (See Business)
 Agencies, Marketing Service, 420
 Allied Industries, and, 395-429
 American, Factors in European Capacity, 399
 Appropriations, 175
 Conditions of, 395-399
 Decline in Profit, 395
 Department of, Funds for Unemployment, 401
 Members of, 99, 100
 Use of Aircraft in, 496
 Fall in Prices, 395
 Federal Irrigation, 227, 228
 Guam, 162
 League of Nations and, 74
 Over Expanded, 395
 Philippine Islands, 159
 Porto Rico, 156
 Production of, 395
 Secretary of, 8, 403
 Air Commerce Act, 456, 496
 Line Operations, Statistics of, 676, 677
 Mail, 676
 Navigation, Aids to, 677
 Passengers, 296, 676
 Transport, Radio Aids, 678
 Aircraft Accident Record, 677
 Engines, 680
 Manufactures, 678
 Naval (See Naval Aircraft)
 Performance, 680
 Production, Statistics, 676, 679
 Aircraft Types (See Aviation)
 Airports of Entry, 456
 Mileage Increase, 676
 Permanent, 456
 Statistics of, 677
 Temporary, 456, 457
 Airway Maps, 678
 Pan-American, 53
 Transcontinental, 678
 Aishton, R. H., 469
 Akron, S. S., 300, 681
 Electrical Equipment, 648

Alabama, Child Labor, 579
 Constitutional Amendments, 117, 118
 Security Laws of, 344
 Alaska, 151-153
 Education, 152
 Fisheries, 424, 425
 Gold Yield, 444, 445
 Government of, 152, 153
 Hawaii and, 151-154
 Mines in, 444
 Natural Resources of, 151, 152
 Population, 152
 Railroad, 152
 Social Aspect of, 152
 Volcanoes, 689
 Alden, Carroll Storrs, 303
 Aldrich, Bess Streeter, 812
 Alfaro, Dr. Ricardo J., 168
 Alien Property Custodian, 101
 Alkali Manufacture, 720
 Allen-Moyle Flight, 700
 Allied Debts, 44
 Alien Seamen, 517
 Allodolomite, 690
 Aluminum Alloy, 668
 In Shipbuilding, 658
 Amendment, Lame Duck, 4
 American Association, Advancement of Science, 617
 Convenes, Bankers, 354
 Civic, 143
 Municipal, 146
 Diamond Line, 489
 Exploration, 699-704
 Farm Board, 58
 Fiction, 811-813
 Geographical Society, 701
 Geographical Union, 697, 698
 High School Challenged, Democracy of, 891
 Indian, 795, 796
 Industry, Conditions in, 451
 Jewish Congress, 610
 Judicature Society, 124
 Law Institute, 121
 Library Association, 839
 Machinery, 681-683
 Mind, Literature, 817
 Museum of Natural History, 702, 703
 National Red Cross, 101
 Poetry, 813, 814
 Policy, Manchurian Affair, 40
 Political History, 1-37
 Relations in the Orient and Near East, 57-62
 Samoa, 162, 163
 Economic Conditions, 163
 Education, 163
 Financial Conditions, 163
 Government, 162
 Health Conditions, 163
 Hurricane, 162, 163
 Population, 163

INDEX

- Scene, Literature, 817
 Society of Municipal Engineers, 243
 Thought, Literature, 816
 Ames, Joseph S., 101
 Amoeba, 735
 Analysis Situs, 614
 Andrée Expedition, 809
 Andrews, Irene O., 569
 John B., 582
 Anesthesia, Avertin, 766
 Spinal, 765, 766
 Anglo-Iraq Treaty, 62
 Norman Writers, 819
 Animal Industry, Bureau of, 402
 Oils, Investigation of, 460
 Parasites, 413, 414
 Anslinger, Harry J., 95
 Antarctic Travel Books, 809
 Anthropology and Ethnology, 794-798
 Anti-Trust Laws, 333
 Anzio, Mosaic Discoveries, 844
 Appalachian Structure, 685
 Apple Crop, 420
 Rots, 415
 Appropriation Act, Reclamation, 225
 Arbitration, Industrial, 578, 579
 Mediation in Industrial Disputes, 577-579
 Archaeological Discovery, 843-847
 Archaeologists, Necrology of, 847
 Archaeology, Greek, Literature, 830, 831
 Archbridge, Concrete, 627, 628
 Architectural Education, 856
 Architecture, 855-857
 Effect of Depression on, 855
 Publications, 856
 Arctic Exploration, 704
 Oceanography, 699
 Travel Books, 809
 Ardea, Prehistoric Findings, 843
 Ariel Dam, 629
 Arizona, Boulder Dam, 117
 Gold Yield, 445
 Pueblo Culture in, 795
 Arkansas, Legislation in, 344
 Arlington Bridge, 853
 Arliss, George, 863
 Armaments, 63
 Defense, 252-305
 Limitation, 293
 President's Policy, 14
 Army, Adjutant General's Department, 266, 267
 Advisory Bodies, 256
 Aeronautics, 269, 270
 Aircraft Board, 496
 Air Units, 263
 Anti-Aircraft Defense, 260
 Aviation (See Aviation, Army)
 Cavalry, 260, 261
 School, 271
 Cemeterial, 267
 Chaplains, Corps of, 268, 269
 Chemical Warfare Service, 265
 School, 273, 274
 Civilian Personnel Division, 269
 Coast Artillery Corps, 261
 School, 272
 Communications, 261
 Construction, 264
 Corps Areas, 256, 257
 Courts-Martial, 268
 Departments, 257
 Engineer Corps, 262
 School, 272
 Field Artillery, 261
 School, 271, 272
 Finance Department, 265
 School, 272, 273
 General Staff, 255, 256
 Command Divisions, 256
 Duties of, 255, 256
 School, 275
 Housing Program, 268
 Industrial College, 275
 Infantry, 260
 Schools, 271
 Inspector General's Department, 268
 Judge Advocate General's Department, 268
 Library Service, 266
 Maneuvers, 260, 261
 Material and Equipment, 261
 Medical Department, 264, 265
 School, 273
 Meteorological Service, 263
 Militia Bureau, 263, 264
 Motion Picture Service, 266, 267
 Motorization, 260
 School, 274, 275
 National Guard, 263, 264
 Ordnance Department, 264
 Districts, 264
 School, 273
 Organization, 255-257, 260, 261, 263
 Pay Schedule, 254
 Personnel, Accomplishments of, 260-269
 Photographic Service, 263
 Procurement Planning, 254
 Quartermaster Corps, 267, 268
 School, 274
 Radio, 262
 Amateur, 263
 Real Estate, 267
 Reserve Officers' Training Corps, 275, 276
 Reserves, 255
 Savings Accounts, 265, 266
 Signal Corps, 262, 263
 School, 272
 Statistics, 263
 Strength, 257
 Statistics, 257-259
 Subsistence, 267
 School, 274
 Tank School, 271
 Telephone and Telegraph Service, 263
 Training, 263, 264
 War College, 275
 Weapons, 260, 264
 Worm, Out-break, 753
 Arnold Arboretum, 745
 Arosemena, President Flor-
 encio H., 168
 Art, American, 851
 Centre Bronzes, 852
 Exhibitions, 848, 849
 Greek, Literature, 830, 831
 Primitive, Influence of, 847
 Artistic History, 803
 Artists, American, Activity of, 843
 Arts, The, 843-873
 Letters, and American Academy of, 852
 Asbestos Dust, 772, 773
 Asia, Explorations, 703
 Minor, Discoveries in, 847
 Trade in, 325
 Asiatic Fleet, U. S., 291
 Travel Books, 809
 Association of American Law Schools, 884
 Of Business Educators, 889, 890
 Astronomical Observatories, 617, 618
 Society, American, 617
 Of the Pacific, 617
 Astronomy, 617-623
 Mathematics, and, 613-623
 Publications on, 623
 Atkinson, J. Brooks, 861
 Atlantic Ocean, Oceanography, 698
 Atmospheric Research, 694, 695
 Atoms, Dynamic Nature, 728
 Attorney's Office, United States, 109
 Austin, Mary, 812
 Warren R., 33
 Australia, Depreciation of Pound, 371
 Exploration, 704
 Trade in, 325
 Austria, Collapse of Largest Bank, 370
 Customs Union with Germany, 370
 Austrian, Banking Crisis, 23
 Austro-German Customs Union, 62-64
 Union, Articles of, 63
 Autobiography, 807
 Autogiros, 493, 681
 Automobile Casualties, 242
 Industry, 637
 Regulations in District of Columbia, 164
 Taxes, 213-215
 Commercial Cars, 214
 Common Carriers, 214
 Measure Changes, 213, 214
 Passenger Cars, 214
 Registration Fees, 213, 214
 Revenue, 215
 Statistics, 215
 Automobiles, Production of, 452
 Automotive Engineering, 652-657
 Equipment, 654
 Avertin, Anaesthesia, 766
 Aviation, Aerodynamics, 494
 Aircraft Radio, 501
 Construction, 495

INDEX

- Problems, 494
- Speed, 493
- Types, 493
 - Autogiros, 493
 - Biplane, 493
 - Monoplane, 493
- Air Mail Service
- Airplane Brakes, 495
- Instruments, 495
- Air Routes, 492
- Anti-aircraft Defense, 260
- American Exploration, 699-701
- Armament Limit, 75
- Army, 269, 270
 - Accidents, 270
 - Air Corps Program, 269, 270
 - Construction, 270
 - Maneuvers, 270
 - Material, 270
 - School, 275
 - Statistics, 270
 - Units, 263
- Bureau of Census, 496
- Lighthouses, 496
- Mines, 496
- Standards, 495, 496
- Commercial, 43, 676-681
 - Airports, 492
 - American Supremacy, 676
 - Management of, 676
 - Operations, 681
 - Passenger Fare, 676
 - Safety, 676
- Construction in, 680
- Engines in, 679
 - Air Cooled, 494
- Exploration Flights, 700
- Federal Appropriations, 177
- Greenland, 700, 701
- Industry, 490, 491
- Manufactures in, 679
- Meteorology, 694, 695
- Naval (See Naval Aviation)
- Night Flying, 491
- Number of Planes, 678
- Oil Engine, 636
- Passenger Airplane, 491
 - Comfort, 680
- Patent and Design Board, 496
- Personnel in, 678
- Photograph, 217, 218
- Progress in, 490-496, 680
- Radio in, 491
- Record Flights, 700
- Road Marks, 244
- Shipment of Insects, 753
- Speed in, 680
- Stations, 491
- Tanks, 260
- Telegraph Circuits, 678
- Weather Service, 695
 - Stations, 700, 701
 - Greenland, 700, 701
- Azel's Castle, 815
- BABSON Reports (See Business)**
- Babylon, German Excavations, 845
- Babylonian Terra-Cottas, 834
- Bacteria, 735
- Bahamas, Exploration, 704
- Bail, 112
- Bailey Beulah, 198, 213
 - Catherine S., 857
- Bain, Peter, 293, 485
- Baker, Newton D., 16, 29
 - W. R. G., 497
- Ballin, Hugo, 849
- Baltic Countries, Duty
 - Changes, 335
- Bangkok, Narcotic Drugs Conference, 68
- Bank Taxes, 210-212
 - Ad Valorem, 211, 212
 - Corporation Taxes and, 209-212
 - Income, 210, 211
 - Legislation, 200
 - Measured by Income, 211
 - Savings, 212
 - State, 193
 - Technology, 364
- Banking, 307
 - Affairs, 351-354
 - Conditions (See Finance)
 - Crisis Austrian, 23
 - Transactions (See Finance)
 - Volume of, 317-319
 - Trust, 354-356
- Banks, Failure of, 352
 - Frozen Assets, 352
 - Increase as Trustees, 355, 356
 - Labor, 568
 - National, 363
 - State, 364
 - Statistics of Resources and Liabilities, 368
 - Trust Companies, and 363-368
- Baptist Convention, Northern, 590
- Bar Admission Requirements, 884, 885
 - Examiners, National Conference of, 884
- Barbituric Acid Pharmacology, 765
- Barbour, W. Warren, 33
- Barley, Price of, 407
- Bartlett Maps, 706
- Bartlett, Wayland, 854
- Barton, George A., 833
- Barry, Philip, 862
- Basle, Central Bank Conference, 26
- Battleship Divisions, 29
 - Decommissioned, 294
 - Equipment Betterment, 295
 - Modernization of, 294
- Bauer, John, 232, 238
- Baugh, Albert Croll, 818
- Beales, Le Verne, 502
- Becker, May Lamberton, 811, 813
- Beebe Expedition, 704
- Beef Cattle, Breeding of, 408
 - Increase in Corn Belt, 408
 - Prices of, 408
 - Shipments of, 408
 - Supply of, 408
- Beetle, Japanese, 416
- Behrman, S. N., 862
- Benjamin West Society, 850
- Bernard, L. L., 790
- Bernstein, Henri, 865
- Berry, Rose V. S., 851
- Bianchite, 690
- Bicentennial, George Washington, 33-36
- Binkley, Robert C., 64
- Biography, 805-808
 - American Presidents, 806
 - Explorers, 807
 - Foreign, 808
 - Military Leaders, 807
 - Pioneers, 807
 - Public Men 806, 807
- Biological Sciences, 730-755
 - Survey, 401
- Biplane, the, 493
- Bird, Frederick L., 235
- Birth Control, Religion, 560, 594, 599
 - Rates, 775
 - Registration Area, 524
 - States in, 776
 - Statistics, 776
- Bituminous Paving Emulsions, 671
- Blaine, Senator, 5
- Blind, Books for the, 840
- Blood-cells, 732
- Blood Fat and Emotion, 757
- Blooming Mill Operation, 640
- "Blue Sky" Legislation, 344
- Board of Trade Claims, 566
- Boardman-Polando Flight, 699
- Boccaccio, Opera of, 857
- Bolivian-Paraguayan Dispute, 56
- Boll Weevil, Infestations of, 417
- Bond, Frank, 101
- Bond Market (See Business)
- Bonds Fidelity, Losses Under, 380
- Bonner, F. E., 18
- Booth, Fenton Whitlock, 109
- Borah, Wm. E., 15, 23
- Border, Arrests and Seizures, 516
 - Patrol, 516
- Borland Act, 165
- Boston Act, 849, 850
 - Symphony, 859
 - Water Supply, 237
- Botanical Explorations, 745
- Societies, 743
- Botany, 743-748
 - Economic, 749-751
- Boulder Canyon Project, 223, 224
 - City, 224
 - Religious Center, 593
 - Dam, Arizona, and, 117
 - Construction, 239
 - Operation, 239
- Bowstring Archbridge, 623
- Boys' Club Movement, Programs of Preventive Nature, 542
- Bradstreet, Statistics on Prohibition, 31
- Brainerd, Ezra, 100
 - J. G., 640
- Brandeis, Justice, 16
- Branner, George C., 219-223
- Brazil, Deflation of Currency, 372
 - Trade with, 56
- Brewer, Gertrude Delaven, 836
- Briand, M., 63, 69, 73

INDEX

- Bridges, Clearances of, 627
 British Columbia, Granby
 Copper Co., 441
 Empire, Coalition Govern-
 ment, 338
 Gold Standard Suspen-
 sion, 338
 Inter-Empire Trade, 338,
 339
 Tariff Extension, 337, 338
 Tariff Position, 338
 Wheat Imports Quota, 338
 Brown, H. H., 657
 Herbert D., 100
 Hugh A., 223
 Lytle, 280
 Robert M., 699
 University, Research Re-
 port, 904
 Walter F., 98
 Brown-tail Moth, 752
 Bruce Medal, 624
 Brueggeman, Bessie Parker,
 101
 Bruening, Chancellor, 25
 Import Duties, 337
 Brush, Katherine, 812
 Buck, A. E., 179
 Paul H., 802
 Buckwheat, Production of, 406
 Budget Appropriation Bills,
 181
 Congressional Action, 181
 Congressional Appropria-
 tions, 183
 Debt Retirement, 188
 Deficit, 178, 179, 183, 184
 Economy Drives, 184, 185
 Estimates, 180
 Statistics, 180
 Execution of, 183-185
 Fiscal Year, 1930, 177
 1931, 178
 Message, 105, 106, 179, 180
 National, 179-185
 Relief Measures, 181
 Revenue Drop, 178
 Tax Problem, 187
 Receipts, 178
 Treasury Borrowings, 184
 Buffalo, Children's Court, 543
 Building Activity, 468
 Codes, 675
 Construction, 142
 Appropriations, 176
 Decline in, 308
 Employment Conditions,
 575
 Engineering Colleges, 889
 Fire Resistance, 142
 Libraries, 840
 Loss in Value of, 453
 Unemployment, 142
 Volume of, 453, 454
 Materials, 454
 Program Emergency Con-
 struction, 8
 Enlargement of, 8
 Units, Masonry, 671, 672
 Buildings, Department, Ap-
 propriations for, 402
 Steel, 628
 Bureau of Aeronautics, 288,
 302
 Animal Industry, 402
 Census, 496
 Construction of Ships, 288
 Crime Prevention, 541
 Customs, Function of, 456
 Organization of, 456
 Dairy Industry, 402
 Engineering, 288
 Insular Affairs, 266
 Investigation, 532
 Lighthouses, 496
 Medicine and Surgery, 287
 Mines, 496
 Naturalization, 520
 Naval Supplies, 288
 Navigation, 287
 Navy Yards, 288
 Ordnance, 288
 Plant Industry, 401, 402
 Standards, 495, 496
 Business Activity, 306
 Casualty Insurance, 380
 Conditions, Agricultural
 Commodities, 307
 Babson's Index Figures,
 310
 Balance of Trade, 320
 Bear Market, 314
 Bond Shrinkage, 315
 Debt Liquidation, 314
 Economic and, 306-311
 Employment, 310, 311
 Export Decline, 319
 Exports Reduced, 309
 Foreign Trade, Statistics
 of, 320, 321, 324
 Import Decline, 319
 Reduced, 309
 Industrial Output, 308
 Production, 320
 Labor Statistics, 311
 Manufacturing Decline, 307
 Market, 312
 Mining Adjustments, 307
 Money Market, 316
 Movement for Readjust-
 ment, 314
 New Era Philosophy, 314,
 315
 Railway Earnings, 309
 Copper Stock, 314
 Decline, 357
 Store Sales, 468
 Demoralization of, 469
 Depression, 379, 455
 Bank Failures, 351, 352
 Labor Factors, 431
 Economy Effect, 455
 Education, 889, 890
 Metropolitan Council on,
 889
 Educators, Association of,
 889, 890
 Employment Conditions
 (See Employment Con-
 ditions)
 Failures, 309
 Finance, and, 306-393
 Industrial Earnings, 453
 Industries, Dividend Pay-
 ments, 309
 Labor Organizations, 568
 Machinery Industry, 681
 Security Markets, 314
 Statistics, 316
 Trade Handicaps, 372
 Unemployment (See Unem-
 ployment)
 Butler, Nicholas Murray, 16
 Butts, Allison, 448
 Byrd Expedition, 809
 CABBAGE Worm, 417
 Cabinet, the, 14
 Cairo, Discoveries at, 846
 Calculus of Variations, 614,
 615
 Calendar Reform, 75
 California, Congressional Rep-
 resentation, 115
 County Home Rule, 127
 Gold Output, 445
 Precipitation, 696
 Security Laws of, 344
 Silver Yield, 445
 Unemployment Reserves, 584
 University Publications, 746
 Water Supply, 237
 Callander, W. F., 403
 Callahan, Stephen B., 109
 Cammen, Leon, 633
 Campbell, Thomas E., 100
 W. G., 95
 W. W., 101, 623
 Canada, Copper Statistics,
 441
 Customs Laws, 339
 International Boundary
 Commission, 217
 Trade with, 324, 325
 Treaty with United States,
 169
 Water Power, 238
 Canal Zone, Naturalization,
 519
 Canby's Classic Americans,
 816
 Canfield, Dorothy, 812
 Capital Balance, 465
 Exports, 465
 Income Balance, 466
 Capper-Kelly-Capper Bill, 5
 Caraway, Senator, 1
 Hattie, 33
 Carbon Dioxide, as Refriger-
 ant, 421
 Carmichael, R. D., 781
 Carnegie Institution, Oceano-
 graphy, 699
 Library Grants, 840
 Carroll, H. K., 587, 596, 597
 Carstens, C. C., 559
 Cartography, 704-706
 Casualty Insurance, Miscel-
 laneous and, 379-382
 Premium Income, 380
 Underwriting Factors, 380
 Catacomb, Christian, Sculp-
 ture in, 844
 Cather, Willa, 812
 Catholic Church, Broadcast-
 ing, 603
 Canonization, 604
 Charitable Work, 603
 Christian Unity, 603, 604
 Papal Encyclicals, 603, 604
 Statistical, 602
 Wedlock, 603
 World Relief, 603
 Cavalry (See Army)
 Cavert, Samuel McCrea, 597
 Cecil, Russell L., 760

INDEX

- Celestial Mechanics, 615
 Cellophane Production, 722
 Central America, Exploration, 701
 Government Recognition, 53
 Central Bank Conference, 26
 Central Europe, Financial Emergency, 24
 Cereal Chemistry, 717
 Cermak, Mayor, 137
 Chadbourne Plan, 55
 Chalmers, Henry, 334
 Chang Hsueh-Liang, 57, 58, 60
 Changes in Electoral Laws, 118-120
 Chaplains, Corps of (See Army)
 Chaplin, Charlie, 866
 Check Transactions (See Finance)
 Chemical Element No. 87, 907
 Engineering, 720-723
 Progress, 721
 Waste and Recovery, 721
 Kinetics, 710, 711
 Warfare Instruction, 273, 274
 Service, 265
 Chemicals, Foreign Trade, 723
 Price Trends, 723
 Chemistry Agricultural (See Agricultural Chemistry)
 Electric Moments, 711
 Electrical (See Electrochemistry)
 Eyring, 709
 Industrial (See Industrial Chemistry)
 Inorganic, 707-711
 Kinetics, 710, 711
 Mathematics, and, 615
 Molecular Reaction, 708-710
 Organic (See Organic Chemistry)
 Pauling, 707, 708
 Physical, 707-711
 Physics, and, 707-729
 Platinum, 721, 722
 Slater, 708
 Soils and, Bureau of, 217
 Vanadium, 721, 722
 Wave Mechanics, 707, 708
 Chesapeake Bay States, Catch in, 426
 Chevalier, Maurice, 868
 Chiang Kai-shek, 57, 58
 Chicago American Exhibition, 853
 Art Show, 849
 Board of Trade, 342
 Civil Service in, 107
 Crime Detection, 138, 139
 Handbill Distribution, 143
 Institute for Juvenile Research, 542
 Local Government in, 136, 137
 Model Tenements of, 551
 Museums, 871
 Opera, 858
 Police Investigation, 138, 139
 Prehistoric Paintings, 850
 Regional Planning, 147
 World's Fair, 855
 Child Guidance, The
- Bureau of, 560
 Health White House Conference, 897
 Hygiene, 116
 White House Conference, 771
 Labor, 579-581
 Amendment, 559, 580
 State Adoption, 116
 Bibliography, 581
 Conferences, 580
 Investigations, 581
 Legislation, 579-581
 Migratory, 580
 Night Work, 580
 Prohibitions, 571
 School Attendance, 580, 581
 Marriages, 561
 Welfare, 559-561
 Convalescent Care, 561
 Crime Prevention, 559, 560
 Education, 560
 Epidemics Care, 561
 Health Conditions, 561
 Industrial Accidents, 561
 Legislation in, 559
 Mentally Handicapped, 560
 Physically Handicapped, 560
 Chile, Copper Production, 440
 Exchange Stability, 371
 Trade with, 56, 57
 China, 57, 58
 Disquieting Elements in, 57
 Exploration, 701, 702
 Floods in, 58
 Government in, 58
 Projects, 57, 58
 Manchuria, and, 59, 60
 Missions, 597
 Political Outlook, 57
 Scientific Research in, 798
 Tariff Schedule, 340, 341
 Chinchbug, 416
 Chinese Aliens, 514
 Japanese Dispute, 48
 in U. S., 510, 511
 Clumberg, Hans, 864
 Christian Associations, 601, 602
 Churches, 590, 591
 Congregational Communion, and, 590, 591
 Chronology of Financial Events, 382-393
 Cinchina Congress, 743
 Cincinnati, Music Festival, 860
 Symphony Orchestra, 860
 Circuit Court of Appeals of the United States, 108
 Citizenship Acquisition, 519
 Naturalization, and, 519-523
 by, 519
 Training, 523
 City-County Consolidation, 129
 Government Statistics, 134, 135
 Planning, 147, 148
 Zoning, and, 147, 148
 Politics, 131-135
 Regional Plans, and, 147
 "Civic Pride Officer," 145
 Civil Service, Budget
- Message, 105, 106
 Classification, 102, 106
 Commission, 100
 Council of Personal Administration, 104, 105
 Expansion, 102
 Federal, 102-107
 Foreign, 106
 Personnel Survey, 105
 Post Office Department, 106
 Prohibition, and, 102, 103
 Reform, 107
 South, 107
 Veterans in, 103, 104
 Survey, 104
 Wickersham Commission, 102, 103
 Clark, Allan, 852
 Clarkeite, 690
 Classical Journal Index, 833
 Cleveland, City Politics, 132, 133
 H. Burdett, 241
 Light and Power, 236
 Mayor-Council System, 333
 Symphony Orchestra, 869
 Climatology, 697
 Clocks, 618, 619
 Coal, 431
 Bituminous, 434, 435
 Cleaning System, 435
 Coke, and, 433-435
 Geology, 222, 223
 Mines, Rock Dusting in, 433
 Safety Measures, 571
 Mining, 565, 566
 Preparation, 433, 435
 Saline Process in, 435
 Coast Artillery Corps (See Army)
 Coast Guard, Air Service, 496
 Coastwise Commerce, Statistics of, 284
 Coffee, 332
 Coke, Coal, and, 433-435
 Coker, F. W., 1, 8
 Collegiate Education, 880-884
 Enrollment, 881, 882
 Federal Aid, 883
 Financial Situation, 880, 881
 Library Budget, 883
 Cologne, Glass Industry of, 847
 Colombia, Stability of Exchange, 371
 Colonial History, 804
 Colorado, Early Culture in, 795, 796
 Fraudulent Practice Act, 344
 Gold Output, 445, 446
 River Board, 630
 Wage Claims Court, 567
 Columbia University Research, 906, 907
 School of International Affairs, 905
 Combustion, Chemistry of, 712, 713
 Comets, 621
 Commerce Department, Members of, 100
 Economic Situation, 467
 European, 62, 63
 Foreign, 453
 Internal, Conditions of, 467-469

- Interstate, Federal Prosecution, 112, 113
- Panama Canal, Statistics of, 284
- Statistics of, 285
- Water, 246
- Commercial Aviation. (See Aviation, Commercial)
- Forest Land, 423
- Marine Engineering, 661-665
- Commodities, Changes in Duty on, 461, 462
- Commodity Futures Market, 341-343
- Communism, Aim of, 543
- Communist Activities, 5
- Communists, 574
- Community Transit, 480-484
- Employment in, 481
- Revenue, 481
- Compensation Act, 8
- Insurance, 381
- Law, 381
- Comstock, Alzada, 212
- Concrete, 669, 670, 671
- Conditions of Agriculture, 395-399
- Internal Commerce, 467-469
- Manufacturing, General, 451-456
- Cone, Edwin T., 438
- Conger, G. P., 781
- Congo, Copper Resources, 443
- Exploration, 703
- Congregational Christian Communion, and, 590-591
- Churches, 590, 591
- Congress Budget, and, 180-182
- Appropriations, 183
- Criticism of President, 26
- Functions, 1-7
- International, for Testing Materials, 665
- Personnel of, 82-88
- Prohibition Report, 29
- Seventy-first, Controversies in, 1
- Seventy-second, 6
- Congressional Reapportionment, 115
- Connecticut, Child Welfare Commission, 542
- Government of, 125
- Security Laws of, 344
- Socialist Party Gains, 544
- Unemployment Reserves, 584
- Conover, Milton, 82, 92
- Constitutional Law, 110, 111
- Construction, Engineering and, 625-684
- Equipment and Naval, 293-299
- Contracts, 122
- Coolidge, Calvin, Address on Washington, 34
- Cooperative Marketing, 343
- Cooperite, 690
- Copeland, Senator, on Prohibition, 29
- Copper, 440-443
- Alaskan, 151
- Alloys, 669
- Depression and, 718
- Domestic Mines, 440
- Price of, 430, 431
- Producers, Conference of, 443
- Production Cost, 460
- Curtailment, 440
- World, 333
- Shares, 314
- Steel Alloy, 439
- Stocks, 442
- World Output, 440
- Corinth, Excavations at, 844
- Corn Borer, European, 416
- Ear Worm, 416
- Growing Factors in, 750
- Production of, 407
- Vitamin A in, 749
- Cornell, Hecksher Foundation, 906
- Katharine, 862
- Cornwall, Dean, 849
- Corporation Taxes, 199, 209, 210
- Bank Taxes and, 209-212
- Court Decisions, 210
- Legislation, 209, 210
- State, 192
- Statistics, State Income, 203, 204
- Corporations in District of Columbia, 165
- Suits by Foreign, 171
- Corpus Luteum Hormone, 763
- Corrupt Practices Act, 5
- Cosmic Rays, 727, 728
- Cotton Acreage, 404
- Grain Crops, and, 403-407
- Loss, 17
- Price, 17, 397, 418
- Production of, 403, 404
- Reduction act, 332
- Value of, 404
- Yield of, 404, 405
- Council-Manager Charters, 135, 136
- Counter Statement, 815
- Counterfeiting, International, 74
- County Manager Plan, 128
- Planning, 147
- Regional and, 129, 130
- Rural Government, and, 126-130
- Court of Appeals of the District of Columbia, 108, 109
- Claims of the United States, 109, 111, 112
- Courts-Martial. (See Army)
- Coward, Noel, 864
- Cows, Breeding of, 411
- Cox, Douglas F., 378
- Philip W. L., 877
- William B., 536
- Coxey, Jacob S., 33
- Crab Industry, 426
- Cramer Flight, 700
- Creosote Oil, Investigation of, 460
- Crepis, Paper on, 747
- Crete, Tombs Found in, 845, 797
- Crime Commission, New York State, 542
- Conditions and Treatment, 532-536
- Data, 532
- Enforcement, Administration Studies, 536
- Prevention Bureau, 139, 140, 554, 555
- Rate Increase, 533
- Situation, Phases of the, 792
- Crimes, Arrests for, 534
- Statistics of, 533, 534, 535
- Criminal Cases, Federal, 112
- Immigration, 515
- Justice, Joint Committee on, 123
- Procedure, 123, 124
- Criminals, Immigration, 517
- Crist, Raymond F., 519
- Criticism, Belles Lettres and, 815-818
- Literary, 815, 816
- Cromansil, Steel Alloy, 440
- Crop Plants, Uniformity of Type, 749
- Modification of Heredity, 749
- Crops, Analysis of, 396
- Cross, Governor, 125
- Crothers, Rachel, 863
- Cruisers, Heavy, 297
- Light, 296
- Newly Constructed, 294
- Troubles, 297
- Crum, R. B., 781
- Crystal Classification, 691
- Cuba, 168, 169
- Constitutional Reforms, 169
- Economic Situation, 55
- Government, 168, 169
- Platt Amendment, 55
- Policy of U. S., 51
- Relations with U. S., 55, 168, 169
- Culbertson, Ambassador, 56, 57
- Cuneiform Texts, Literature on, 835
- Cunningham, H. F., 855
- Jr. R. N., 815
- Curtis, Charles, 95
- Curtisite, 690
- Customs, 111
- Appeals, United States Court of, 108
- Court of the United States, 109
- Decisions, 111
- Duties, Decline in, 457
- Pending Cases, 111
- Revenue, Frauds upon, 458
- Union, Austro-German, 62-64
- Cynara, 864
- Cyrene, Discoveries at, 844
- Cytology, 732, 733
- DAIRIES, Management of,** 412
- Dairying, 410-412
- Dairy-herd, Improvement in, 412
- Industry, Bureau of, 402
- Products, Consumption of, 411
- Improvement in Quality, 411
- Increase in Output, 411
- Prices of, 410, 411

INDEX

Dale, Jeffrey, 864
Dallas, City-Manager, 135, 136
Dante, Literature, 826
Davis Amendment, 19
Dwight F., 252
John W., 18
Dawes, Charles G., 24, 60, 73
Manchuria and, 69, 70
Dawson, J. A., 735
Deafness, Work on, 787
Dearborn, Mayor, 133
Death Rates, 774
Registration Area, States in, 524, 774
Statistics, 775
Debt Reduction Prospects, 188, 189
Retirement of the Public, 187, 188
United States, Public, 185-189
Debts, Allied, 44
Inter-allied, 188, 189
Municipal, 198
War, 189
Defense and Armaments, 252-305
Delaware, Legislation in, 344
Old Age Pensions, 583
Delinquency Committee, 541, 542
Increase in, 540
Prevention Work in, 540-543
Relation to Surroundings, 540
Studies, 536
Delos, Excavations Made at, 845
Democratic National Committee, Prohibition Issue, 31
Democracy of American High School Challenged, 891, 892
Dennis, Alfred P., 23
L. H., 891
Dentistry, 768-771
Education, 768, 769
Insurance for, 770, 771
Journals, 770
Laboratory Work, 769, 770
Practice of, 770
Trench Mouth, 770
Denver Museum, 742
Department of Agriculture, Members of, 99, 100
Commerce, Members of, 100
Interior, Members of, 99
Justice Dockets, 109
Members of, 97, 98
Labor, Members of, 100
Navy, Members of, 98, 99
State, Members of, 95, 96
Treasury, Members of, 96, 97
War, Members of, 97
Deportation, 511
Causes, 514-516
Destroyers, Designed under London Treaty, 295
Installation of, 296
Reduction under London Treaty, 296
Detroit, "Civic Pride Officer," 145

Civil Service in, 107
Mayor, 133
Development of Trade and Industrial Education, 892-894
Dewey, John, 559, 779
Diesel Engine, Construction, 663
Dinosaurs, Museum Exhibits, 742
Study of, 741
Dinwiddie, Courtenay, 579
Diplomatic History, 804
Dirichlet Series, 614
Disarmament, 72
Churches, 600
Commission, 47
Conference, 47
United States Attitude on, 46
Discovery, Archaeological, 843-847
Diseases and Pests of Livestock, 412-414
Plants, 414-416
District of Columbia, 163-166
Advertising Signs, 164
Appropriations, 175, 176
Civil Service, 102
Corporations, 165
Court of Appeals, 108, 109
Paving Assessments, 165
Police Department, 165, 166
Schools, 164
Supreme Court, 109
Traffic Laws, 163, 164
Divorce Statistics, 529
Dixon, Lincoln, 23
Doak Bill, 3
Doak, William N., 3, 100
Dole, Opposition of President, 10, 11
Dollar, the, Affected by Pound Sterling, 370
Doran, James M., 30
Drama, Elizabethan, 820, 821
Medieval, 820
Draper Medal, 624
Dress Industry, Arbitration, 579
Drought, Effect of, 400
Relief, 1, 2, 8, 400, 548
Stricken States, 400
Drum Storage Battery, 651
Duggan, Stephen P., 57, 76
DuPuy, William Atherton, 151, 160
Dynamic and Structural Geology, 685-689
EARNINGS, Decreases, 567
Earthquakes, 687-689
Research, 689
Resistant Construction, 632
Volcanoes and, 687-689
East, Travel Books of Far, 809
Near, 809
Ecology, Plant, 748
Economic Botany, 749-751
Business Conditions, 306-311
Conditions, American Samoa, 163
in Philippine Islands, 158, 159
Geology, State, 221, 222

History, 804
Planning, 77, 78
Depression, 306, 379
Copper Industry, 718
Electrochemical Power and, 718, 719
Employment Effects, 574-575
League of Nations, 73, 74
Livestock, 408
School Effects, 874, 877
878, 880, 881
Security Values, 306
Social Hygiene, 552, 553
State Centralized Purchasing, 126
Situation in Cuba, 55
Egypt, 61
Europe, 66
Germany, 66, 67
Japan, 58
Labor, 565
Mexico, 54
Porto Rico, 155, 156
South America, 56
Edge, Ambassador Walter E., 66
Edison Memorial, 250, 251
Thomas A., 250, 251, 641
Education, 874-909
Adult, (See Adult Education)
Agricultural, 896, 897
Alaska, 152
Alumni, 838, 903
American Samoa, 163
Architectural, 856
Business, 889, 890
Child Labor Problems, 580-581
Christian, 598, 599
College Requirements, 879
Collegiate, (See Collegiate Education)
Commercial Census, 892
Community Programs, 899
Depression Effects, 874, 877
878, 880, 881
Elementary, 874-877
Engineering, 888, 889
Enrolment Factors, 878, 879
Ethics of Teaching, 877
Expansion Problems of, 899
Federal Board for Vocational, 101
Committee Cooperation, 879
Group Teaching, 876
Guam, 162
Haiti, 166
Home-making, 896, 897
Jewish, 607
Legal, 884, 885
Legislation, 880
Librarian, 838, 839
Medical, 885-887
Developments, 886, 887
Military, 271-276
Ministerial, 887, 888
Motion Pictures, 875, 876
National Survey, 879
Naval, 303, 304
Organization of Teaching Material, 893
Philippine Islands, 159, 160
Porto Rico, 156, 157

INDEX

- Professional, 884-891
- Public, Compulsory, 892
- Pupil Grouping, 879, 880
- Radio Programs, 874, 875
- Research, 875
- Rural, 877
- School Reorganization, 879
- Secondary, 877-880
- Social Reconstruction, 880
- Talking Pictures, 875, 876
- Teaching Body, 890-892
- Training, 896
- Teachers, National Survey, 890
- Test Values, 880
- Trade and Industrial, 892-894
- Turkey, 61
- Virgin Islands, 161
- Vocational, Administrators, 895
- Agriculture, 898
- Conclusions, 894
- Continuation Classes, 894
- Day-trade Classes, 893
- Effect of Depression, 895
- Enrolment, 893
- Equipment of Shops, 893
- Evening Classes, 894
- Functioning of, 895
- Industrial Center, 895, 896
- Itinerant Teaching, 897
- Part-time Classes, 893
- Placement, 893
- Program of, 892, 895
- Stabilizing Effect of, 895
- Training, 892, 895
- Unemployment, 897
- Wisconsin, 897
- Wage-Earning Women, 897
- Educational Association, National, 891
- Institutions, Research in, 904-907
- Edwards, Frank, 133
- G. W., Foreign Honor, 850, 851
- Gurden, 351, 363
- Egypt, 61
- Archaeological Findings, 846
- Economic Situation, 61
- Paleolithic Instruments, 797
- Eighteenth Amendment, 110, 111
- Criticism of, 31
- Opposition to Repeal, 28
- President's Policy, 14
- Record Vote, 32
- Repeal Favored, Baker, 29
- Wickersham Report, 14
- Eisenhower, Milton S., 399
- Elections of 1931, 32-33
- Electoral Laws, Changes in, 118-120
- Corrupt Practices, 120
- Primaries, 120
- Registration or Enrolment, 119, 120
- Elementary Education, 874-877
- Elevator System, 648
- Elis, Bronze Helmet Found, 845
- Elizabethan Drama, 820, 821
- Literature, 820
- Elm Disease, 415
- Leaf Beetle, 752
- Electric Explosions, Fatalities
- Decreased, 434
- Furnaces, 719
- Light Association, National, 634
- Lighting and Power, 248-251
- Consumption Analysis, 248
- Developments, 236
- Expansion, 249, 250
- Investigations, 235
- Legislation, 250
- Operation, 249
- Revenues, 236
- Service, 248, 249
- Statistics, 249
- Technical Progress, 250
- Liners, 662
- Moments, 711
- Power and Lighting, 248-251
- Sources, 248, 249
- Railway Competition with Buses, 481
- Expenditures of, 481
- Specific Needs of, 482
- Rate Revisions, 234, 235
- Shock Resuscitation, 756, 757
- Electrical Congress, International, 651
- Energy, 644, 645
- Engineering, 640-652
- Direct-Current High-Voltage Transmission, 645
- Illumination, 647
- Instruments, 651
- Insulation Research, 645
- Lighting Fixtures, 647
- Machinery, 645, 646
- Study of Noises, 651
- Systems, 643
- Transportation, 648
- Liners, U. S. Mail Steamship, 663
- Manufacturing, Conditions of, 640
- Standards, Units in, 650
- Electrification, Rural, 643
- Electrochemistry, 718-720
- Economic Depression and, 718, 719
- Electrolytes Aqueous, 719, 720
- Fused, 719
- Furnaces, 719
- Magnesium, 719
- Electrolytes, Aqueous, 719, 720
- Fused, 719
- Electron Tubes, 650
- Ely, Mary L., 900
- Embryology, 733
- Emergency Reconstruction Corporation, 11
- Emhardt, William Chauncey, 604
- Emotional Instability, 788
- Empire State Building, 632
- Employees' Compensation Commission, 101
- Pay of Federal, 105, 106
- Employment. (See Business)
- Agencies, 570
- Bureaus, 116
- Conditions, 574-577
- Depression Effects, 574, 575
- Decrease, 567
- Juvenile, Problem, 892
- Stabilization Act, 298
- Federal, 8, 9
- Service, 3
- Endocrine Glands, 731
- Endres-Magyar Flight, 699
- Engine Types, 635, 636
- Engineer Corps. (See Army)
- Definition of, 642
- Engineering, Aeronautical, 494
- Aqueduct Construction, 630
- Automotive, 652-657
- Bridges, 625-628
- Buildings, 628, 629
- Bureau of, 288
- Caissons, 631
- Chemical, 720-723
- College Buildings, 889
- Commercial Marine, 661-665
- Construction, 226, 227, 625-634
- Materials of, 665-675
- Dams, 629-630
- Distribution, 641
- Education, 888, 889
- Electrical, 640-652
- Fuel Consumption, 635
- Generating Capacity, 635
- Mechanical, 633-640
- Metals in, 666
- Military Problems, 252, 253
- Motor Car, 637
- Research, 632
- Structural, 625-633
- Survey, Public Lands, 230, 231
- Teachers, Summer School, 889
- Traffic, 243
- Tunnels, 630
- Engineers, Corps of, 217
- Licensing of, 642
- Engines, Control, 656
- Cylinder Capacity, 652
- Electrical Equipment, 653
- Noise Reduction, 653
- England, Pound, Sterling, 372
- Prehistoric Findings, 796
- English Language, 818
- Literature, 818-822
- Literature, Eighteenth Century, 822
- General, 818, 819
- Modern, 820
- Nineteenth Century, 822
- Old, 819
- Seventeenth Century, 821
- Entomologists, Necrology of, 753
- Entomology, 751-754
- Bureau of Personnel, 753
- Publications on, 753, 754
- Entries by Airplane, 456
- Entry of Merchandise, 458
- Episcopal. (See Methodists)
- Church. (See Protestant)
- Epistemological Implication, 731
- Epistemology, 731,
- Eros, 619, 620
- Ethics, Business, 782
- Relation to Literature, 782
- Value of, 782
- Ethnology and Anthropology, 794-798

INDEX

Extent of Explorations, 794, 795
 Ethylene Gas, Used on Insects, 753
 Europe, Continental, Economic Depression, 334
 Tariff Revisions, 334
 Trade Controls, 334
 Economic Situation, 66
 Jewish Relief in, 609, 610
 Museums in, 871
 Trade in, 325
 European Commerce, 62, 63
 Corn Borer, 751, 752
 Countries, Defensive Trade-control Measures, 337
 International Obligations of, 369
 Protective Tariff, 336
 Shift of Foreign Trade, 337
 History, 805
 Industrial Civilization, 464
 Travel Books, 809
 Evangelical Church. (See Religion)
 Evans, Frank, 17
 Evolution, Environment Factors, 730, 731
 Organic, 730, 731
 Publications on, 731
 Rate of, 730
 Sexual Selection, 731
 Exchange, Foreign, 369-372
 Quotations, Statistics of, 370
 Exhibitions, Memorial, 854
 Exploration, American, 699-704
 Geographical Society, 701
 Museum of Natural History, 701, 702, 703
 Greenland Weather Stations, 700, 701
 "Nautilus" Voyage, 702
 Export Balance, Favorable, 464
 and import, 463-467
 Trade, Analysis, 321, 322
 Decline in, 463
 Manufactures, 321
 Extra-territoriality, 57
 Eyring's Molecular Reaction, 709
 Ezekiel, Literature on, 834

FACTORIES, Safety Measures, 571
 Factory Building, 628, 629
 Wages of, 453
 Fairbanks, Douglas, 866
 Falconer, Douglas P., 540
 Family Relations, Institute of, 556
 "Splitting," 510
 Far East, Silver Standard of, 371
 Farm Board, Federal, 8, 101
 Income Diminished, 468
 Population, Employment Factor, 398
 Prices, Fall in, 468, 469
 Farmer-Labor Party, 574
 Farmers, Future of America, 898-900

Non-partisan League, 573
 Farms, Aid to, 400
 Employment Conditions, 575
 Increase of Population, 398
 Faulkner, William, 812
 Fay, Sidney B., 62
 Fear, Health Hazard, 788
 Federal Administrative Commissions, 17-23
 Organization, 95-101
 Aid, Education, 883
 Highways, 474, 475
 Libraries, 837
 Opposition, 116
 Road Construction, 401, 402
 States, and, 116
 System of Highways, 474
 Appropriations, 173-177
 Bills, 181
 Changes, Statistics, 174
 Reclamation, 225, 226
 Statistics, 172, 173
 Statistics, Reclamation, 226
 Summary, 182
 Board of Surveys and Maps, 216
 Vocational Education, 101
 Borrowing, 179
 Building Construction Program, 176
 Civil Service, 102-107
 Constitutional Amendments, 115, 116
 Council of Churches. (See Religion)
 Debt, 185
 Employes, Pay of, 105, 106
 Engineering Construction, 226, 227
 Expenditures and Revenues, 172-179
 Comparison, 177, 178
 Farm Board, 8, 15, 101, 331
 Appropriation of Funds, 403
 Loan Fund, 18
 Personnel, 17
 Finance, 12
 Highway Act, 403, 474
 Income Tax, 201
 Indictments, 112
 Institutions, Education Program, 539
 Health Program of, 539
 Irrigation Projects, 227, 228
 Jails, Construction of, 539
 Judicial Prosecutions, 109-113
 Legislation, 8-10
 Mediation, 578
 Oil Conservation Board, 101
 Penal Program, 538
 Personnel Survey, 105
 Power Commission, 14, 101
 Personnel, 18
 Probation Act, 112
 Prosecutions, Courts, etc., 111, 112
 Customs, 111
 Interstate Commerce, 112, 113

Public Lands, 112
 Trusts, 113
 War Risk Insurance, 113
 Radio Commission, 19, 1011
 License Granting, 19
 Power Distribution, 19
 Relief Measures, 181
 Reserve Act, 11
 Bank, 21, 24, 352
 Credit Policy, 362
 Credit, 357
 Membership Resources, 362
 Money Rates, 360
 Statistics of Credit, 357
 Board, 101
 Personnel, 20
 System, The, 357-362
 Committee Report, 362
 Membership of, 362
 Service Classification, 106
 Surveys and Maps, 216-219
 Trade Commission, 101
 Vital Statistics, 773-776
 Warehouse Act, 403
 Water Power Act, 19
 Fels Planetarium, 618
 Felt, E. Porter, 751
 Ferber, Edna, 811
 Fermentation, Agricultural Chemistry, 716
 Ferns and Mosses, Papers on, 746
 Fervanite, 690
 Fess, Simeon D., 32
 Fiction, American, 811-813
 Field Artillery. (See Army)
 Museum of Natural History, 701
 Films, Audible, 866
 Mute, 866
 Production, 869
 Wide, 869
 Finance, Army, 265
 Bank Capital, Private, 368
 Failures, 351, 359, 380, 469
 National Income, 363
 Panics, 351
 Resources of, 351
 Decrease, 351
 Banking Crisis, 353, 354
 Pool, Coöperative, 352
 Transactions, 317-319
 Banks, Gold Drain, 354
 Number of, 351
 Reopening, 359
 Suspended, Statistics of, 359
 Branch Banking, 363
 Budget Control, 185
 Deficit, 183, 184
 Building Appropriations, 176
 Centralization in North Carolina, 126
 Check Transactions, 317
 New York, 318
 Statistics of, 319
 Chronology of Events, 382-393
 Corporation, 7
 Decline in Bank Credit, 358
 Discount Rates, Statistics of, 360
 Dividends of National Banks, 364

INDEX

- Expenditure and Revenue
 - Comparisons, 177, 178
- Export of Gold, 357
- Federal Appropriations, 172-177
 - Changes, 173
- Debt, 185
- Gold Reserve Increase, 361
 - Statistics, 361
- Government Borrowing, 179
 - Revenues, 186
- Guam, 162
- Hoover Moratorium, 187, 188
- Inter-allied Debts, 188, 189
- League of Nations, 74, 75
- Loans of N. Y. Stock Exchange, 358
- Loss of Gold, 360
- Money Rates, 360, 469
- Municipal, 193-198
- National Budget, 179-185
 - Defense Appropriations, 176, 177
- Nicaragua, 167
- Philippine Islands, 158, 159
- Porto Rico, 156
- Public Debt Retirement, 187, 188
 - Lands Receipts, 229, 230
- Reclamation Appropriations, 225, 226
- Relief Measures for Banks, 353
- Rivers, Harbors and Flood Control, 177
- Savings Banks, 366
- State, 128, 129, 189-193
 - Bank Taxation, 193
 - Indebtedness, 193
- Statistics of Assets and Liabilities of Banks, 358
 - Money Rates, 317
- Survey Expenditures, 219
- Tax Scale Problem, 186
- Taxation, Public, 172-215
 - State, 189-191
- Treasury Borrowings, 184
 - Deficit, 185
- Trust Banking, 363, 364
- Finances, Railway, 471
- Financial Conditions, Banking, 307
 - Events, Chronology of, 382-393
 - Situation, European, 337
- Fine Arts, The Commission of, 101
 - Nathan, 543
- Fink, Colin G., 718, 907
- Finland Abandons Gold Standard, 370
- Fire Department Administration, 142
- Instruction, 140
- Insurance, 377, 378
 - Economic Influence of, 377
 - Losses, 377, 378
 - Premiums, 377, 378
- "Mutual Aid," 142
- Prevention, 141
 - Building Construction, 142
 - Bureaus, 141
- Protection, 141
 - Automatic, 645
- Fischer, Israel F., 109
- Fish, Hamilton, 5
 - Propagation, 428
 - Study in, 741
- Fisher, Genevieve, 896
- Irving, 27
- Fisheries, Alaskan, 151, 424, 425, 427, 428
 - By-Products of, 425
 - Middle Atlantic States, 426
 - New England States, 426
 - Statistics of, 428
 - Treaty with Canada, 169
 - U. S., 424-428
 - Vessel, 426
- Fishery Products, Canning of, 425
 - Frozen, 425
 - Value of, 425
- Fleet, Auxiliaries, 296
 - Maintenance, 295
 - Naval Reserve, 291
- Fletcher, Henry P., 23, 459
- Florida, Inheritance Tax, 212, 213
 - Juvenile Court, 542
 - Legislation in, 344
- Floristic Studies, 746
- Folklore, 817
- Folsom Arrow Point, 742
- Food Products, 420
- Forbes Commission, 54, 166, 167
 - Grenfell Expedition, 701
- Foreign Biography, 808
- Born Population, 510, 526, 527
 - Corporations, Suits by, 171
 - Exchange, 369-372
 - Assets, 464, 465
 - Outlook of, 372
 - Statistics of Rates, 369
- Markets, 323
 - Effect on Agriculture, 398
- Medical Schools, 886
- Service Act, 38
 - Board, 39
 - Personnel, 39
 - Classification, 40
 - Diplomatic Personnel, 40, 41
 - Officers Training School, 39
 - Personnel, 106
 - United States, 38-41
- Tariffs, Factors in, 404
- Trade Controls, 334-341
- Trade, 319-325
- Trade (see Business Conditions)
- Balance, 464
- Control, Quota Systems, 336
- Equilibrium, 463
- Forest Conservation, 422
 - Improvement, 401
 - Products Laboratory, 633
- Service, The, 217
- Tent Caterpillars, Outbreak of, 417
- Forestry, 422-424
- Fort, Tomlinson, 613
- Fossil Fields, 741
- France, Agreement with, 25
 - Credit to Germany, 25
- Disarmament, 47
- Import Quotas, 336
- London Treaty Provisions, 299
- Moratorium, 24, 66
- Prehistoric Findings, 796
- Tariff Union, 63, 64
- Versailles Treaty, 24
- Franco-Italian Naval Discussions, 64-66
- Franklin, Benjamin, 38
- Fraser, Laura G., 852
- Fraudulent Practice Act, 344
- Freeman, Frank N., 798
- Freight, Distribution, 468
 - Rates, Increase Denied, 469
- French, Daniel C., 854
 - Literature, Contemporary, 826
 - Eighteenth Century, 826
 - Mediaeval, 825
 - Nineteenth Century, 826
 - Renaissance, 825
 - Seventeenth Century, 826
- Parliament, 336
- Freud, S., 789
- Freyssinet Arch, 627
- Frich Museum, 851
- Fruit, Agricultural Chemistry, 718
 - Citrus, 421
 - Crops, Abundance of, 420
 - Fly, Mediterranean, 421
 - Price of, 397
 - Production Cut, 332
- Fuel Minerals, 222
- Fullinwider, S. P., 287, 292
- Functions of Congress, 1-7
- Navy, 292, 293
- Functionalists, 795
- Future Farmers of America, 898-900
- GALE, Zona, 812
 - Galsworthy, John, 864
 - Gardening Books, 748
 - Gardner, J. Howland, 661
 - Gardiner, William H., 16
 - Garner, John N., 6, 15, 33, 85
 - Gas Geology, 222
 - Propelled Rockets, 694
 - Turbines, 636
 - Gasoline Tax Collections, 214
 - Exemptions, 214
 - State, 192
 - Statistics, 215
 - Gems and Gem Minerals, 691
 - General Accounting Office, 101
 - Geneva, Narcotic Drugs Conference, 67
 - Geographic Board, United States, 101
 - Society Expeditions, National, 703
 - Geographical Society, American, 701
 - Geography, Graphics, 705
 - Geological Surveys, State, 219-223
 - Geology, Appalachian Structure, 685
 - Basic, 219-221
 - Basin Ranges, 686
 - Bibliography, 687
 - Cascade Mountains, 686

INDEX

Coast Ranges, 686
 Dynamic, 687
 And Structural, 685-689
 Fuel, 222
 Igneous Structures, 686, 687
 Metamorphism, 687
 Mineral, 223
 Ouachita Mountains, 685, 686
 Pleistocene History, 687
 State Economic, 221, 222
 Structural, 685-687
 Taconic Disturbance, 685
 Geometry, Work in, 615
 Geophysical Sciences, 685-706
 Union, American, 697, 698
 George-Reed Act, 896
 George Washington Bicentennial, 33-36, 166
 Memorial Bridge, 625
 Georgia, Income Tax, 202
 Securities Act in, 345
 German-Austrian Customs Union, 62-64
 Credit Conference, 66
 Reparation, 44, 67
 Germanic Languages, 823-825, 836
 Literature and, 823-825
 Germany, Banks, 25, 370
 Concessions, 24
 Credit Crisis, 66
 Customs Union with Austria, 370
 Financial Crisis, 25
 Loans to, 25
 Relation with European Powers, 25
 Relief for, 13, 25
 Sculpture, 854
 Socialist Party in, 369
 Gerould, James Thayer, 23
 Gifford Committee on Unemployment, 576
 Walter S., 10, 15, 576
 Gilbert, Prentiss, 48, 60, 73
 Manchuria and, 69
 S. Parker, 24
 Ginger Paralysis, 763
 Girder Bridge, Long Span Plate, 627
 Glaspell, Susan, 812
 Glass, Carter, 361
 Goddin, John C., 344
 Gold, Alaskan, 151
 Balance, in International Trade, 466
 Decrease in U. S. Stock, 370
 Export to Foreign Countries, 357
 Restricted, 369
 International movement, 360
 Maldistribution of, 372
 Movement, U. S., 466, 467
 Outflow, 468
 Silver, 443-447
 Standard, Exchange Fluctuations, 369
 Finland, 370
 Foreign Countries, 369
 Great Britain, 337, 369, 370
 Scandinavia, 370
 Suspension of, 335
 Value of, 444
 World Production of, 443

Golden Gate Bridge, 626
 I. J., 863
 Gompers, Samuel, Memorial to, 853
 Good Earth, The, 811
 James W., 5
 Goodrich, Ernest P., 242
 Gove, George, 550
 Governor, The, 124, 125
 Alaska, 99
 American Samoa, 98
 Guam, 98
 Hawaii, 99
 Virgin Islands, 98
 Governor's Pardon, 125
 Removal Power, 125
 Governors, Conference of, 116, 117
 Democratic Victory, 33
 Recommendations, 127
 Taxation Statements, 190
 Government, Alaska, 152, 153
 American Samoa, 162
 Borrowing, 179
 Commissions, 127, 128
 Costs, 116
 County Manager Plan, 128
 Rural and, 126-130
 Cuba, 168, 169
 Economy, 10
 Expenditures and Revenues, 186
 Fiscal Administration, 128, 129
 Guam, 161, 162
 Haiti, 166
 Hawaii, 153
 Municipal, 131-150
 Functions, 138-142
 Types, 134-138
 National, 82-114
 -owned Buildings, 176
 Philippine Islands, 157, 158
 Porto Rico, 154, 155
 Public Interest in, 126
 Reform Activities, 126, 127
 Reorganization, 126, 127
 State, 115-130
 Virgin Islands, 160
 Gower, Charlotte D., 794
 Graf Zeppelin, Magnetism, 692
 Grafly, Charles, 854
 Graham, William J., 108
 Grain Crops, Cotton and, 403-407
 Production of, 405
 Value of, 405
 Price Trends of, 418
 Sorghums, Production of, 407
 Stabilization Corporation, 17
 Granby Co., Copper Output, 441
 Grandi, Dino, 13, 65, 67
 Truce, 47, 65, 66
 Grants-in-Aid, 116
 Grasshoppers, Outbreak, 416, 752
 Gray Herbarium, Publications of, 745
 Great Britain Abandons Gold Standard, 369-370
 Decline of Pound Sterling, 370

London Treaty Provisions, 299
 Treaties with, Iraq, 42
 Lakes, 280
 Channel Deepening, 282
 Fisheries of, 427
 Fleet, 488
 Greek Language, 831, 836
 Life and Civilization, 832
 Literature, Loeb Library, 833
 Translations, 831
 Green, Paul, 863
 Greenland, Aerology, 694, 695
 Weather Stations, 700, 701
 Groesbeck, Alex J., 18
 Guam, 161, 162
 Agriculture, 162
 American Samoa and, 161-163
 Education, 162
 Financial Conditions, 162
 Government, 161, 162
 Health Conditions, 162
 Population, 162
 Shipping, 162
 Guatemala, 51
 Exploration, 704
 Guggenheim Awards, 851
 Memorial Foundation, 906
 Scholarships, for Sculpture, 853
 Guild, Frederic H., 117
 Gulf States, Fisheries of, 427
 Stream Temperature, 696
 Gums, Chemistry of, 713, 714
 Gymnosperms, 744
 Gypsy Moth, 752
 Extermination of, 753

HAAS, HARRY, J., 353
 Hague, The International Convention, 43
 Haiduck, Andrew F., 676
 Haifa-Bagdad Railway, 62
 Haiti, 166-167
 Administration Transfer Agreement, 167
 American Service Ceased, 43
 Diplomatic Relations with United States, 166
 Education, 166
 Government, 166
 Policy of U. S., 51
 Relations with U. S., 54, 55
 United States and, 166, 167
 Treaty, 166, 167
 Halibut, Decrease of Catch, 427
 Hall, Mordaunt, 866
 R. Dawson, 433
 Hamaguchi, Premier, 58, 59
 Hambrecht, George P., 897
 Handbill Distribution, 143
 Harbors and Rivers, Military Problems, 252, 253
 Waterways and, 246-248, 280-286
 Hardy, Edward R., 377
 Hare Senate Bill, 6
 Harlequin Bug, 417
 Harmon Foundation Exchange, 852

INDEX

- Harper Prize, The, 811
Hart, Albert B., 33, 34
Historian Washington Bicentennial, 34
Jane, 10, 14
-McLaren Flight, 700
Harvard, Astronomical Observatories, 617, 618
Clark Bequests, 906
Exhibits, 742
Milton Fund, 906
Havana, Pan-American Treaties, 44
Hawaii, 153, 154
Appropriation for Road Construction, 403
Exports, 153
Government, 153
Industries of, 154
Internal Revenue, 153
Population, 153
Race Numbers, 512
Volcanoes, 689
Hawaiian Population, Statistics, 153
Hawes-Cooper Bill, 537
Hawley Smoot Tariff Bill, 54
Hawthorne Fund, 850
Hayes, H. K., 749
Hazard, Daniel L., 691
Health Boards, 555
Conditions in American Samoa, 163
Guam, 162
Labor, 571
Philippine Islands, 160
Porto Rico, 157
Virgin Islands, 161
League Work, 76
Public, (see Public Hygiene)
Heavenly Bodies, 622
Hebrew Law, 834
Union College, 608
Henderson, Charles W., 443
Francis M., 847
Hengstler, Herbert C., 38
Herculeum, Discoveries in, 843
Hergesheimer, Joseph, 812
Hetchy Hetchy Tunnel, 630
Highway Commission, Inter-American, 53
Conference, 53
Highways, Classification by Type, 475
Expenditures of, 476
Mileage of, 475
Motor Roads, 474-477
Hill, Charles E., 169
Hindenburg, President, 337
Hines, Frank T., 101, 276
Hiscock, Ira V., 771
Histories, General, 802
Historiography, Tendencies, 802
History, 802-805
American Political, 1-37
Geography of, 705
Greek, 832
Reference Guide, 805
Special Studies, 803
Hodgkin's Disease, 759, 760
Hofstadter Investigation, 131
Hog Cholera, Decrease in Mortality, 413
Holliday, Houghton, 768
Hollister, John B., 33
Hollywood, Station KNX, 19
Holmes, Justice, 16, 144
Home-making Education, 896-897
Honduras, Relations with, 55, 56
Honey, Chemistry of, 715
Hoover Dam, 629
Contract, 223, 224
Tunnels of, 630
Herbert, 3, 23, 53, 95, 102, 121, 148, 166, 183, 184
Address to Congress, 45
on Geo. Washington, 35
Attitude on Prohibition, 29
Bank Situation, 352
Budget, The, 105, 106, 178, 179
Building Industry, 11
Civil Service, 104, 105
Commercial Aeronautics, 676
Commission, 27
Commodities, 461, 462
Debt Cancellation, 189
Disarmament, 46, 72
Economy Drives, 184
Employment Relief, 10
Expenditure Proposals, 180
Federal Expenditures Released, 10
Foreign Policy, 13
Grandi and, 67
Laval and, 67
Message to Congress, 11, 26, 49, 50
Moratorium, 23-27, 45, 46, 66, 72, 187, 188, 361
Muscle Shoals, 238
National Credit Corporation, 359
Nicaragua, 168
Plan, 370
Pocket Vetoes Wagner Bill, 10
Public Domain Committee, 224, 225
Soldier Bonus, 11
Supporters of, 32
Trade, 21
Unemployment, 576
Veteran Bonus, 3, 10, 182
Wage Maintenance Policy, 10
J. Edgar, 532
Thomas N., 32
Hormell, Orren C., 126
Hormones, Pathology, 756
Pharmacology, 763
Horn Robert Chisholm, 830
Horticulture, 420, 421
House of Representatives, 14
Change in Control, 33
Members of, 32, 89-92
Speaker, 85
Housing, National Conference on, 552
Problems, Legislature, 550
Program, Army, 268
Progress, 550-552
Public Action in, 552
Howell Bill, 5, 6
Hudson River Bridge, 625, 626
Vehicular Tunnel, 630
Huebner, S. S., 306, 312
Hughes, Charles E., 14, 16, 108, 121
Hulin, Wilbur S., 784
Humanism, 781, 782
Humanities, The, 802-909
Hunt, C. W., 101
Hunter, Merlin H., 172, 189, 193
Hurd, Charles D., 711-714
Hurley, Edward N., 45
Patrick J., 97, 255
Hurst, Fanny, 812
Hybrid Origin of Plants, 730
Hyde, Arthur Mastick, 99, 395
Hydro Plants, 643, 644
Hydrocarbons, Higher, 711, 712
Hydrogen-ion, 735
Hydrographic Office, The, 216
Hygiene, Child, 116
Industrial, 772, 773
Maternal, 116
Mental (see Mental Hygiene)
Public (see Public Hygiene)
Rural, 773
Social (see Social Hygiene)
Hypertension Pathology, 759
Hyslop, J. A., 416
ICE CREAM Sanitation, 772
Iceland, Sculpture, 854
Idaho, Gold Mines of, 446
Income Tax, 202
Legislation in, 345
Old Age Pensions, 583
Illinois, Congressional Representation, 115
Constitutional Law, 110
Hall of Fame, 853
Housing Problem of, 550
Juvenile Delinquent Work in, 542
Legislation in, 345
Tax Reduction, 206
Zoning Adjustment, 148, 149
Illuminating Engineering Society, 647
Immigration Amendments, 518
Analysis, 513, 514
Border Problems, 516
Chinese, 514
Conditions, 509
Deportation, 514, 515
History, 803
Law Administration, 516, 517
Legislation, 517, 518
Pacific Coast, 512
Population, 508-531
Problems, 513-518
Secretary of Labor, 518
Sources, 513
Visas, 523
Women's Laws, 518
Import and Export Balance, 463-467
Trade, Analysis, 322
Geographical Distribution, 325

INDEX

Food Stuffs, 323
 Manufactures, 322, 323
 Imports, Decline in, 463, 464
 Refused Entry into U. S., 462
 Seizure of, 462
 Income, Capital, Reduction of, 466
 Taxes, 201-205
 Adjustments, 186
 Federal, 201
 Legislation, 199
 State, 201-205
 Revenue, 204, 205
 Statistics, 203-205
 Insular Affairs, Bureau of, 266
 Dependencies, 252, 253
 Independent Offices Appropriation Act, 8, 403
 India, Missions, 597
 Indian Affairs, Office of, 217
 Art, 848
 Reservations, 403
 Indiana, Securities Act in, 345
 Indictments, Federal, 112
 Indo-China, Explorations, 703
 -European Linguistics, 835, 836
 Industrial Chemistry, 720-723
 Cellophane, 722
 Competition in, 720
 Petroleum, 723
 Plastics, 772
 Profits, 720
 Rayon, 722
 Conditions, 307
 Hygiene, 772, 773
 Insurance, 381
 Plants, Safety Laws, 381
 Production, Loss in, 451
 Stabilization, 642
 Industries, Agriculture and Allied, 395-429
 European, Report on, 461
 Mineral, 430-450
 Infantry, (see Army)
 Ingalls, Walter R., 447
 Inheritance Taxes, 212, 213
 Florida, 212, 213
 Gift, 212
 State Reciprocity, 213
 Inland Waterways, Commerce, 283
 Corporation, 281
 Traffic Statistics, 283, 284
 Inorganic and Physical Chemistry, 707-711
 Insect Pests, 416, 417
 Insecticide, Chemistry of, 715, 716
 Inspector General's Department (see Army)
 Institute of Pacific Relations, 78-80
 Member Groups, 79
 Politics, The, 77, 78
 Insurance, Casualty and Miscellaneous, 379-382
 Compensation, 381
 Dental, 770, 771
 Disability Benefits, 376
 Fire, 377, 378
 Fraternal, 377
 Industrial, 377
 Labor (see Labor Insurance)
 Life, 373-377
 Marine, 378, 379
 Mortality, 375
 New York State, Department Action, 379
 Service Efficiency, 384
 Theft, 380
 Unemployment, 576
 Workmen's Compensation and, 582-584
 Intellectual Coöperation Committee, 76
 Intelligence Tests, 798
 Inter-Allied Debts, 188, 189
 Intercoastal Traffic, 247
 Waterways, 282
 Interdenominational Activities, 597-602
 Interior Department Appropriation Act, Rider to, 8
 Internal Commerce, Conditions of, 467-469
 Waterways, Statistics of Commerce, 284
 International Boundary Commission, 217
 Conferences, 66-71
 List of, 70, 71
 Conventions, 44
 Coöperation, Libraries, 840
 Debt, 467
 Economic Planning, 77
 Labor Office, 71-77
 Law, 76
 Nickel Co., 441
 Relations, Church, 601
 Situations Affecting the U. S., 38-81
 Statistics, 74
 Interstate Commerce Commission, 21, 22, 100, 469, 470
 Federal Prosecution, 112, 113
 Relations, 117
 Inukai Cabinet, 60
 Premier, 59
 Inulin, Chemistry of, 715
 Invertebrate Zoology, 735-741
 Investment Factors, Drop in, 465
 Trust Capitalization, 349
 Classification of, 346
 Diagram of, 347
 Incorporated, 348
 In the United States, 346-351
 Outlook of, 349, 350
 Present Status of, 349, 350
 Ions, High Speed, 727
 Iowa, Fiscal Administration, 129
 Legislation in, 345
 Tax Reduction, 205
 Iraq, 62
 U. S. Nationals in, 42
 Ireland, Pleistocene Discoveries, 797
 Iron Castings, Malleable, 668
 Malleable, 639
 Production of, 452
 Steel, and, 438-440
 Irrigation Applications, 232
 Reclamation, and, 223-228

Results, 227, 228
 Irwin, Inez Haynes, 812
 Island Governments, 98
 Ismet Pasha, Premier, 60
 Italian-French Naval Discussions, 64-66
 Literature, 826, 827
 Italy, Additional Tax, 335
 London Treaty Provisions, 299
 Sculptures, 854

JAMESTOWN, N. Y., Light and Power, 236
 Jansson, A. H., 661
 Japan, 58, 59
 Depression, 58
 Gold Exported to U. S., 371
 Inukai Government, 59
 London Treaty Provisions, 299
 Manchuria, and, 59, 60
 Manchurian Objectives, 59
 Missions, 597
 Political Troubles, 58
 Relations with U. S., 60
 Tariff Revision, 341
 Japanese Beetle, 751, 752
 Jebelet El Beda, Statues found, 846
 Jensen, Jens P., 205, 209
 Jewish Congress, American, 610
 Economic Handicaps, 607
 Education, 607
 European Relief, 609, 610
 Institute of Religion, 609
 Minorities, Protection of, 610
 Position in Palestine, 609
 Religious Work, 608
 Synagogues, 608
 Theological Seminars, 608
 Joerg, W. L. G., 704
 Johnson, Hiram, 15
 Joliet, Prison Riot, 538
 Josephus, Literature on, 835
 Judaism and Jewish Communal Affairs, 607-610
 Judd, Lawrence M., 99
 Judge Advocate General's Department (see Army)
 Office of, 289
 Judicature Society, American, 124
 Judicial Jurisdiction, Naturalization, 520
 Prosecutions, Federal, 109-113
 Prohibition, 109, 110
 Selection, 124
 Systems, State, 124
 Judiciary, Personnel of, 108, 109
 Justice, Department of, Members of, 97, 98

KAGAWA, Toyohiko, 598
 Kalich, Max, 852
 Kansas, Changes in Legislation of, 345
 City, Liberty Memorial, 855
 Tax Reduction, 205

INDEX

Kaufman, George S., 865
 F. W., 823
 Kellogg Pact, 60, 72, 73
 Manchurian Situation, 48, 49
 Kelly, George, 863
 John B., 602
 Kemel Pasha, President Mus-tapha, 60
 Kentucky, "Blue Sky" Law in, 344
 Constitutional Amendment, 33, 118
 Democratic Victory, 33
 Referenda, 118
 Kern, Jerome, 865
 Kerns, J. Alexander, 835
 Keokuk, Dam, 208
 Kerosene, Chemistry of, 712
 Ketchum, Milo S., 625
 Kettleborough, Charles, 118
 Kidneys, 731
 Physiology, 758, 759
 Kieffer, Reverend G. K., 587
 Kill van Kull Arch Bridge, 627
 Kindred, James E., 731
 Kinetics, Chemical, 710, 711
 King, W. V., 18
 Kish, Discoveries, 845
 Excavation, 701
 Kleiber, Erich, 859
 Klein, Arthur J., 880
 Komora, Paul I., 556
 Kramer, Roland L., 319
 Kransite, 689

LABOR Administration, 572
 Arbitration (see Arbitra-tion)
 Banks, 568
 Benefits, 567, 568
 Care of Aged, 568
 Child (see Child Labor)
 Collective Bargaining, 571, 572
 Conditions and Organiza-tions, 565-568
 Cost of Living, 567
 Court Decisions, 566, 567
 Department, Members of, 100
 Economic Situation, 565
 Employment, 567
 Conditions (see Employ-ment Conditions)
 Problems, 570, 571
 Health Conditions, 571
 Hours of, 569, 570
 Insurance, 567, 568
 Laws, 566, 567
 Legislation, 565-585
 Mediation (see Mediation)
 Office, International, 77
 Pensions, Old Age, 569, 583
 Public Employees, 569
 In Politics, 572-574
 Communists, 574
 Farmer Labor Party, 574
 Socialist, 573
 Porto Rico, 156
 Relief Work, 567
 Religious Activities, 573
 Safety Measures, 571
 Senator Norris, 572

Strikes, 566
 Unemployment (see Unem-ployment)
 Union Management, 565, 566
 Politics, 572, 574
 Wage Rates, 567
 Vocational Rehabilitation, 582
 Wages, 567
 Workmen's Compensation (see Workmen's Com-pensation)
 Labrador, Forbes-Grenfell Expedition, 701
 La Folette, Governor, 124, 125
 Lagrange, Problems of, 614, 615
 Lake Superior, Copper Mine, 432
 Survey, 217
 Lame Duck Amendment, 4
 Lamont, Robert Patterson, 100
 Thomas W., 54
 Lamos, Architectural History, 845
 Land Office Work, 229
 General, The, 216
 Tax Exemption, 207
 Taxes, Property and, 205-209
 Landedite, 689
 Lands, Public (see Public Lands)
 Lane, Katherine, 852
 Language, Balto-Slavic, 836
 English (see English Lan-guage)
 Germanic (see Germanic Languages)
 Greek (see Greek Language)
 Hittite, 835
 Indo-European, 835
 Literature and, 802-842
 Romance (see Romance Languages)
 Semitic (see Semitic Lan-guages)
 Latin America, Duty Changes, 339
 Duty-free Importations, 340
 Executive Tariff Author-ity, 339
 Reduction in Export Duties, 340
 Restriction of Imports, 339
 Trade in, 324, 325
 Control in, 340
 Monopolies, 340
 U. S. Policy and, 50
 -American Conferences, 53
 History, 805
 Relations, 52-57
 Languages, 836
 Literature, 827-830
 Vergil, 827, 823
 Laughlin, Harry H., 508
 Laurent, Robert, 852
 Laval, Premier, 13, 15, 67
 Law Administration, Immi-gration, 516, 517
 Enforcement, 121
 Federal Aid, 116
 Hebrew, 834

Institute, American, 121
 International, 76
 Observance and Enforce-ment, 27
 National Commission on, 101
 Reform, 121-124
 Agency Liability, 122
 Contracts, 122
 Criminal Procedure, 123, 124
 Life Estates, 123
 Proximate Cause, 123
 Torts, 122
 Trusts, 122
 Schools, Association of American, 884
 Statistics, 885
 Unification and League of Nations, 74
 Lawrence College, Paper Chemistry, 907
 Laws, Conflicts of, 122
 Restatement of, 121-123
 Lead, 448-450
 Consumption of, 449, 450
 Output by Countries, 449
 Present Status of, 448, 449
 Price of, 449
 Properties of, 450
 World Production, 449
 Leafhoppers, Interfere with Harvesting, 417
 League of Nations, 42
 Agriculture, 74
 American Coöperation, 71, 72, 73
 Armaments, 68
 Aviation, 75
 Calendar Reform, 75
 Conferences, 67
 Council Table, 73
 Counterfeiting, 74
 Disarmament, 46, 72
 Economic Depression, 73, 74
 Financial Committee, 74, 75
 Intellectual Coöperation, 76
 Iraq, 62
 Law Unification, 74
 Liberia, 75
 Manchuria, 60, 68-70
 Mexico, 54
 Narcotic Drugs, 75, 76
 Public Health, 76
 Statistics, 74
 Tariff Union, 63, 64
 United States, 47, 71-77
 Learned Societies, American Council of, 905
 Leather, Output of, 452
 Lee, Ferdinand D., 101
 Leet, L. Don, 687
 Legal Education, 884, 885
 Le Galliene, Eva, 865
 Legislation, Agricultural, 399-403
 Automobile Taxes, 214
 Child Labor, 579-581
 Corporation Tax, 209, 210
 Electric Light and Power, 250
 Immigration, 517, 518
 Junior Colleges, 880
 Labor, 566, 567, 568-572
 (See Labor Legislation)
 Libraries, 837

INDEX

- Naturalization, 523
- Public Service, 232, 234
- Utilities, 235, 236
- Significant Federal, 8-10
- States, 344-346
- Tax, 198-201
- Traffic, 244
- Unemployment, 576, 577
- Wage, 569
- Workmen's Compensation, 582
- Legge, Alexander, 17
- Lemort, Katharine, 541
- Lenschner, A. O., 623
- Lepcis Magna Uncovered, 844
- Leplace's Integral, 614
- Levy, Benn W., 864
- Lewis, William Draper, 121, 122
- Lewisburg Penitentiary, 538
- Liberia, 75
- Libraries, 836-841
 - Adult Education, 837, 838
 - Bibliographical Work, 841
 - Carnegie Grant, 840
 - Funds for, 840
 - International Coöperation, 840
 - New Buildings, 840
 - Prison, 838
 - Publications, 839, 840
 - Rockefeller Grant, 841
 - Statistics, 836, 837
 - Training for, 838, 839
- Library Association, American, 839
- Service, Army, 266
- Life Estates, 123
- Insurance, 373-377
 - Annuities, 376
 - Company, Purchase of Bonds, 375
 - Depression Effects, 373
 - Dividend Statistics, 376
 - Statistics of, 374, 373
 - Trusteed, 355
- Lift Span Bridge, 627
- Light Elements, Disintegration, 724, 725
- Lighting and Power, Electric, 248-251
 - Street, 647
- Lightning, Transmission in, 644
- Lignin, Agricultural Chemistry, 718
- Lilley, E. R., 436
- Lincoln, Gatewood G., 98, 162
- Lindsay, Vachel, Death of, 813
- Linear Differential Equations, 614
- Literature and Language, 802-842
- Lithopene, 448
- Livestock, Depression effects, 408
- Diseases and Pests of, 412-414
- Federal Irrigation Projects, 228
- Health of, 412, 414
- Marketing Problems, 397
- Meats and, 408-410
- Record of Utility Value, 410
- Tick Eradication in, 413
- Tuberculosis in, 412, 413
- Local History, 804, 805
- Loche, Charles E., 430
- Locomotives, Development in, 648
- Logan, Frank, 853
- Logic, Textbooks on, 780
- London Conference, 26, 64
- Naval Treaty, 6, 42
- Treaty, Battleship Strength, 293, 294
- Longworth, Nicholas, 6, 14
- Loomis, Frederic B., 741
- Los Angeles, Concerts in, 860
- Light and Power, 236
- Mural Paintings in, 849
- Regional Planning, 147
- U. S. S., 300
- Water Power, 240
- Lucas, Robert H., 4
- Lumber Industry, Competition in, 423
- Over-production of, 423, 424
- Luther, Dr., 25
- Lutherans (see Religion)
- Lybyer, Albert Howe, 57
- MAC DONALD, RAMSAY,** 24
 - Thomas H., 474
- Machado, President, 55, 168, 169
- Machine Buying, 682
 - Tools, 636, 637
- Machinery, American, 681-683
- British Competition, 682, 683
 - Demand for, 682
 - Export Trade, 682
 - Industry, depression effects, 681
 - Outlook, 683
 - Progress in, 682
 - Stabilization of price, 682
- Mackaye, J., 780, 781
- Mackerel, Catch of, 426
- Madagascar, Explorations, 703
- Madison, N. J., Mayor, 133
- Magicians, Society of American, 784
- Magnesium, Electrochemistry, 719
- Magnetic Investigations, 693
- Observatories, 692
- Surveys, 691, 692
- Magnetism, Polar Exploration, 692, 693
- Publications, 693, 694
- Terrestrial, 691-694
- Magnetograph, Ocean, 693
- Magoffin, Ralph van Demin, 843
- Maine, Administrative Reorganization, 125
- Civil Service in, 107
- Constitutional Amendment, 117
- Referenda, 118
- Securities Law in, 345
- Maitlandite, 690
- Maize Papers, 747
- Malcom, Roy, 166
- Managua, Earthquakes in, 55
- Manchuria, 59, 60, 68-70
- Fighting in, 59
- Institute of Pacific Relations, 78, 79, 80
- Japanese Army in, 59, 60
- Objectives in, 59
- League of Nations, 60, 68-70, 72, 73
- Policy of President, 13
- Sino-Japanese Competition, 59
- United States' Attitude, 72, 73
- War in, 60
- Manchurian Question, America's Position, 47, 48
- Manganese, Russian, 5
- Manhattan, S. S., 664
- Manitoba, Copper Output, 441
- Manufacture of Gases, 643
- Manufactures, Census of, 453
- Coal Consumption, 504
- Cost Comparisons, 503
- Fuel, 504
- Materials, 503
- Effect of Depression, 502
- Factory Value of, 502
- Motor Costs, 504
- Oil Consumption, 504
- Production of, 502
- Statistics of, 452, 453, 502-505
- Transportation, 451-507
- Wage-earners, 503
- Manufacturing (See Business)
- Classifications, 452
- Conditions in, 451-456
- Decline in Prices, 307
- Employment Conditions, 574, 575
- Establishments, Output Restricted, 468
- Iron and Steel in, 639
- Volume of Production, 451
- Map Projections, 704
- Mapping, Aerial Photography, 217, 218
- Stereoscopic, 218
- Surveying Services, 216, 217
- Triangulation and Leveling, 217
- Maps, Bartlett, 706
- Board of Surveys and, 101
- Graphic, 705
- Historical Geography, 705
- Oceanography, 705, 706
- Public Lands, 231
- Relief, 705
- Marine Corps, 290, 302
- Engineering, Commercial, 661-665
- Freighters, 662
- Machinery Developments, 662
- Naval Architecture and, 657-661
- Progress in, 661
- Engines, 635, 636
- Insurance, 378, 379
- Factors in, 378
- Premiums, 378
- Statistics of Business Written, 378
- Merchant, The, 485-490
- Products, Report on, 460
- Radio, Value of, 500
- Underwriters Association, 379

INDEX

- Maritime Affairs, 43
 - Jurisdiction, 169-171
- Marketing, Agricultural, 418-420
 - Fruit, 421
- Markets, Foreign, 323
- Marlatt, C. L., 95
- Marmer, H. A., 697
- Marriage, Protestant Episcopal Debate, 592
- Marriages, Statistics, 529
- Marsh, Arthur Richmond, 341
- Marshal's Office, United States, 109
- Marshall Field Expeditions, 701
- Martin, George E., 108
- Maryland, "Blue Sky" Law, 345
 - Workmen's Compensation, 582
- Masonry, Brick, 672
 - Building Units, 671, 672
 - Materials, Weathering of, 672
- Massachusetts Bill board Cases, 142, 143
 - Child Welfare Commission, 542
 - Housing Relief, 550
 - Light and Power Analysis, 237
 - Public Utilities Legislation, 236
 - Unemployment Reserves, 584
- Masillon, O., Mayor, 33, 133
- Materials of Engineering and Construction, 665-675
 - Advantages of Specification, 675
 - Damping Capacity, 673
 - Standardization of, 675
 - Testing Laboratory, 632
- Maternal Hygiene, 116
- Maternity Aid Bill, 5
- Mathematical Association of America, 616
 - Buildings, 617
 - Societies, Foreign, 617
 - Society, American, 615, 616, 617
- Mathematicians, Foreign, 616
 - Prominent, 616
- Mathematics, 613-617
 - Addresses on, 616
 - Astronomy and, 613-624
 - Doctorates, 616
 - National Research Fellows, 616
 - Publications on, 615
 - Research in, 613
 - Review of Subject of, 613
 - Summer School, 616
- Mather, Kirtley, 635
- Mathews, John M., 44, 115, 124
- Mathias, Mildred E., 743
- Matson Line, 486, 664
- Maya, Investigations in, 796
- Mayo, Charles H., on Mental Diseases, 558
- Mayoralty Elections, 133
- McCarl, J. R., 101
- McFadden, Representative, 16
- McKees Arch Bridge, 627
- McKelvie, S. R., 17
- McLaren, Walter Wallace, 77
- Mead, Bennet, 532
- Meat Packing Trust, 113
- Mechanical Constructions, 665
 - Engineering, 633-640
 - Boiler Outage, 634
 - Depression Effects, 633, 634
 - Sheet Materials, 639, 640
 - Steam Power Generation, 634
 - Tubing, 640
 - Engineers, American Society of, 634
- Mechanization, Military, 253
- Mediation Adjustments, 577, 578
 - and Arbitration in Industrial Disputes, 577-579
- Federal, 578
- Industrial, 578
- Railroad Labor, 577, 578
- State, 578
- U. S. Board of, 101, 577, 578
- Medical Education, 885-887
 - Psychiatric Teaching in, 558
 - Sciences, 756-777
 - Students in Foreign Schools, 886
 - Selection of, 885, 886
 - Study, Facilities for, 886
- Medicine, 760-762
 - Laboratory Progress, 760
 - 761
 - Surgery and, Bureau of, 287
- Medieval Drama, 820
- Mediterranean Fruit Fly, 752
- Meleney, Frank L., 765
- Mellon, Andrew W., 3, 14, 66, 96, 101, 181
 - Budget Deficit, 184
- Members of the House of Representatives, 89-92
 - Senate, 88, 89
- Memorial Commission, National, 101
- Mencken and Shaw, 815
- Mendelian Evolution, 730
- Menhaden Industry, 426
- Mental Clinics, Community, 557
 - Diseases, Hospitalization of, 557
 - Knowledge of, 556, 557
 - Treatment of, 557
- Hygiene, 556-559
 - Education in, 558, 559
 - Legislation in, 558
 - National Committee, 558
 - (See Mental Diseases)
- Tests, 798-800
 - Development of, 798
 - Wards, Survey of, 557
- Merchandise, Distribution of, 468
- Merchant Fleet, Balanced, 487
- Marine The, 485-490
 - Act, 488, 661
 - Affairs, Depression, 485
 - Building Program, 485, 486
 - Government Aid, 488
 - Maintenance, 483
 - Naval Reserve, 291
- New Liners, 485
 - Ownership, 488
 - Tanker Construction, 486
 - Vessels Commissioned, 486, 487
- Mercury Poisoning, 764
- Merlino, Camillo P., 825
- Mesopotamia, Expedition to, 797
- Metal, Effect of Temperature on, 666
- Metallic Minerals, 223
- Metals, Corrosion of, 667
 - Fatigue of, 666
 - Non-ferrous, Production of, 452
 - Welding, 667, 668
- Metaphysics, 783
- Metazoa, Cytology, 736, 737
- Morphology, 736
- Physiology, 737-741
- Sensory Organs, 737, 738
- Meteorological Service, Army Use, 263
- Meteorology, Aeronautical, 694, 695
 - Climatology, and, 694-697
 - Marine, 695-697
- Methane, Isolation of, 435
- Methanol, Synthetic, 720
- Methodist Episcopal Church, 593, 594
 - Protestant Church, 594
- Methodists, Ecumenical Methodism, 593
- Metropolitan Council on Business Education, 889
 - Opera House, 887
- Mexican Bean Beetle, 753
 - Exhibits in U. S., 847, 848
- Foreign Debt, 53
- Peso, Decline of, 54
- Mexicans in United States, 511, 512
- Mexico, Archaic Culture, 796
 - Discoveries in Ruins, 843
 - Economic Situation, 54
 - League of Nations, and, 51, 54
 - Relations with U. S., 51, 53, 54
- Meyer, Jr., Eugene, 20
- Michigan, Child Guidance Clinics, 542
 - Constitutional Amendments, 118
 - Prison Conditions in, 536
 - Referenda, 118
 - Tax Reduction, 205
 - University of, Research Library, 907
- Middle Atlantic States, Fisheries of, 426
- Military Biographies, 807
 - Education, 271-276
 - Mechanization, 253
 - Problems of the United States, 252-255
 - Relief Work, 253, 254
- Militia Bureau, (See Army)
- Milk Sanitation, 772
- Millay, Edna St. Vincent, 814
- Miller, A. J., 759
 - C. M., 892
 - John A., 480
- Mills, Ogden L., 14

INDEX

- Milne, A. A., 864
 Milwaukee, Handbill Distribution, 143
 Home Rule, 137
 Socialist National Convention, 544
 Mine Airing, 434
 Waters, Acidity of, 434
 Mineral Industries, 430-450
 Industry, Depression, 430
 Leasing Act, 231, 232
 Prices, Decrease in, 430
 Mineralogy and Petrography, 689-691
 Publications, 691
 Minerals, Fuel, 222
 Metallic, 223
 New, 689, 690
 New York City, 691
 Mines, Disasters in, 433, 434
 Labor Factors in, 431
 Output Restricted, 468
 Mining (See Business)
 Advances in, 431
 Employment Conditions, 574, 575
 Industrial Problems in, 432
 Industry, Competition in, 432
 Government Aid, 433
 Machines Used, 432
 Regulation of, 432
 Ore Dressing, and, 430-433
 Production Loss, 451
 Ministry, Education for, 887, 888
 Minnesota, Adult Education in, 902
 "Blue Sky" Law Enforcement, 345
 Farmer-Labor Party, 574
 Taxation Committee, 128
 Miocene Beds, 742
 Mississippi River, Archeological Discoveries, 796
 Commission, 217
 Flood Control, 286
 Act, 285
 System, 280
 Navigation, 282
 Missouri Income Tax, 202
 Botanical Garden, 745
 Mitchell, U. S. Attorney-General, 333
 William DeWitt, 97
 Moffett, W. A., 300
 Mohler, John R., 412
 Molecular Reaction, 708-710
 Molnar, F., 864
 Mona Lisa Opera, 859
 Moncada, President, 55
 Money Market (See Business, Finance)
 Security and, 312-317
 Rates, Statistics, 317
 Monoplane, the, 493
 Monroe Doctrine, 51, 52, 54
 Montana, Amendment Passed, 345
 Mines of, 446
 Referenda, 118
 Moon, 619
 Mooney-Billings Cause, 863
 Moore, Charles C., 101, 228
 C. J., 161
 Moratorium Conference, 66
 War Debt, 23-27
 Morley, Christopher, 812
 Morphology, 731
 Experimental, 734
 Morris, Howard Britton, 109
 Logan, 101
 Morrow, Dwight W., 15
 Mortality Data, 535
 Mortar and Brick, 673
 Mortgages, Defaults of, 375
 Moses-Linthicum Act, 38
 Senator, 7
 Most-favored Nation, 57
 Moth, Coddling, Infestations of, 416
 Film, Prepared by Government, 753
 Motion Pictures, 866-869
 Army, 266, 267
 Educational, 875, 876
 Foreign Offerings, 868, 869
 Religion, 600
 Technical Progress, 866
 Motor Bus Industry, Economic Factors, 477
 Equipment, 477
 Expansion, 478, 479
 Inter-City Traffic, 477
 Merchandising, 478
 Revenue of, 477
 Rolling Stock, 478
 Legislation, 479
 Operating Companies, 478
 Operations, Statistics of, 479, 480
 Service, 477-480
 Taxation on, 479
 Roads and Highways, 474-477
 Plan of, 476
 Routes, 476
 Travel, Greater than Rail, 476
 Truck, Competition with Railroads, 470
 Vehicles, Gasoline Used, 476
 Motors, A-C., 646
 Mountain Pine Beetle, Infestations of, 417
 Mulholland, John, 784
 Multiplication of Series, 614
 Municipal Association, Federal, 146
 Expenditures, 193-196
 Statistics, 194-197
 Finance, 193-198
 Functions, 138-142
 Building Construction, 142
 Fire Instruction, 140
 Police Developments, 139
 Government, 131-150
 Types of, 134-138
 Hydroelectric Developments, 240
 Indebtedness, 193
 Loans for Unemployment, 144
 Miscellanies, 142-146
 Officials, Training of, 146
 Ownership of Utilities, 235-238
 Publications, 237
 Receipts Statistics, 197
 Revenues, 196, 197
 and Costs Compared, 197
 Roadside Improvement, 143
 Munro, Dana G., 54
 Murphy, T. F., 773
 Muscle Shoals, 3, 238, 239
 Bill, 182, 641
 Veto by President, 14
 War Department, 253
 Museum of Art, Modern, Exhibition at, 852
 Museums, Educational Element in, 871
 Exhibits in, 871
 Lectures in, 871
 Science and Industry, 870-872
 Music and the Opera, 857-861
 Mussolini, Signor, 24
 Mycology, Publications on, 746, 747
 Myers, Alonzo F., 884
 Denys P., 42
 NADIR SHAH, King, 62
 Nadler, Marcus, 369
 Nagatelite, 690
 Narcosis, Pharmacology, 764, 765
 Narcotic Drugs, 75, 76
 Conferences, 67, 68
 Vendors, 517
 Pharmacology, 762, 763
 National Academy, 852
 Of Sciences, 101
 Advisory Committee for Aeronautics, 495
 Anthem, 10
 Banks, Statistics of, 363
 Budget, The, 179-185
 Commission on Law Observance, 101, 537
 Conference of Bar Examiners, 884
 Convention, Republican, 7
 Credit Corporation, 11, 353, 359
 Defense Appropriations, 176, 177
 Economic Planning, 77, 78
 Education Association, 891
 Expenditures and Revenues, 172-179
 Geographic Society Expeditions, 703
 Government, 82-114
 Guard (see Militia Bureau)
 And Interstate Relations of States, 115-117
 Memorial Commission, 101
 Museum, U. S., 742, 745
 Personalities, 14-16
 Probation Association, Report of, 542
 Prohibition Act, 9, 10
 Survey of the Education of Teachers, 890
 Secondary Education, 879
 Nationals, Protection of, 52, 53
 Naturalization, Alien Population Problem, 520
 Bureau of, 520
 Citizenship, 519-523
 Fees, 521
 Legislation, 523
 Machinery, 519, 520

INDEX

- Petitions and Grants, 521, 522
 Procedure, 520, 521
 Repatriation, 522
 Statistics, 522
 Women, 9, 522
 World War Veterans, 522
 Nautilus (see Wilkins-Ellsworth)
- N a v a l Academy Appointments, 303**
 Aviation Taught, 303
 Length of Course, 303
 Requirements, 303
 Aeronautics, 300-302
 Aircraft, Duties of, 300
 Equipment, 301, 302
 Instruments, 302
 Operations, 302
 Propellers, 301
 Radio, 301
 Structure, 301
- Architecture and Marine Engineering, 657-661
 Armaments, Limitation of, London Treaty for, 293
 Aviation, Five Year Program, 300
 Mapping, Porto Rico, 300
 Relief Work, 300
 Bases, Commercial, 293
 Communications System, 293
 Conferences, 46
 Construction Truce, 66
 Equipment, 293-299
 Discussions, Franco-Italian, 64-66
 Draft Agreement, 65
 Education, 303, 304
 Functions, Analysis, 292
 Building and Maintenance, 292
 Observatory, U. S., 618
 Operations, Office of, 289
 Petroleum Reserve Office, 289
 Policy, 292
 Power, Treaty Status, 299
 Reserves, Classes, 291
 Shore Stations, 290
 Supplies, Bureau of, 288
 Vessels, 295
 War College, Newport, 304
 Navigation, Bureau of, 287
 Navy, Administration, 287
 Base Force, 291
 Budget Office, 290
 Commander-in-Chief, 287
 Department Appropriations, 177
 Bureaus of, 287, 288
 Members of, 98, 99
 Personnel, 287
 Enlistments, 303
 Functions of, 292, 293
 Objectives of, 292
 Operating Policy, 292
 Organization of the, 287-291
 Personnel Maintenance, 292
 Secretary of, 287
 Training for, 303
 Yards, Bureau of, 288
 Division, 289
- Negro, Northern Migration, 511
- Nemi, Discoveries at, 844
 Neoplasms, 759
 Nervous System, Hormones, 756
 "Wire-Tapping," 758
 Netherlands, the, Fiscal Emergency Measure, 335, 336
 Neurology, 788
 Nevada Mines, 446
 Neville, Leslie E., 490
 Nevins, J. D., 456
 Newark, Housing and Recreation, 551
 Newbery Medal Award, 839
 Newcomer, Mabel, 201
 New England States, Fisheries of, 426
 Socialist Elections, 573
 New Hampshire, Old Age Pensions, 533
 Penalties for Law Violation, 346
 New Jersey, By-Passing, 245
 Changes in Legislation, 346
 Child Labor, 579
 Classification of Prison Inmates, 539
 Democratic Victory, 33
 Electoral Laws, 119
 Local Government, 127, 128
 Municipal Government in, 137
 Old Age Pensions, 583
 Port, Military Significance, 253
 Regional Planning, 130
 New Mexico, Deposits of Potash in, 431
 Excavations at, 843
 Mines of, 447
 New Orleans, Meeting of Botanical Society, 743
 New York, Board of Standards and Appeals, 149
 Botanical Garden, 745
 City, Bureau of Child Guidance, 542
 Business Education, 889
 Committee of One Thousand, 132
 Crime Prevention Bureau, 139, 140
 Fire Instruction, 140
 Housing Law, Amendments to, 550, 551
 Minerals, 691
 Opera in, 857
 Parking, 245
 Politics, 131, 132
 Port, Military significance, 253
 Regional Planning, 147
 Socialist Elections, 573
 Stock Exchange, Bond Sales, 315
 Borrowing from, 358
 Attitude on Trusts, 350
 Water Supply of, 144, 237
 Traffic Lanes, 245
 State Reforestation Amendment Carried, 33
 Barge Canal, 246
 Check Transactions, 318
 Constitutional Amendments, 117, 118
- Crime Commission, 542
 Foreign Born in, 510
 Income Tax, 202
 Museums in, 871, 872
 Politics, Public Attitude, 131, 132
 Power Authority, 238
 Public Hygiene, 771, 772
 Public Service Commission, 232, 233
 Regional Planning, 130
 Socialist Party Gains, 544
 System of Prison Classification, 539
 Times, Editorial on Prohibition, 31
 Unemployment Reserves, 584
 Workmen's Compensation, 582
- Nicaragua, 167, 168
 Canal, Survey, 235
 Earthquake, 167, 300, 687, 688
 Financial Credit, 167
 Nationals in, 53
 Non-Intervention in, 51, 52
 Policy of Administration, 13
 Relations with, 55, 167, 168
 Stimson's Policy in, 53, 55
 Warfare, 167
 Nickel-Clad Steel, 668
 Nicolayite, 690
 Nicotiana, Studies on, 747
 Nillig-Hoiris Flight, 700
 Nine-Power Treaty, 60, 68, 69, 72
 Nineveh, Findings at, 846
 Nitrites, Tolerance, 763, 764
 Nobel Peace Prize, 16
 Noble, G. Kingsley, 730
 Non-Metals, 669
 Noranda, Copper Output, 441
 Norris Bill, 238
 George W., 15
 Jean Hortense, 132
 Senator, 4, 572
 North Carolina, Administrative Reorganization, 125, 126
 Child Labor, 579
 Financial Centralization, 126
 Fiscal Administration, 128, 129
 Income Tax, 202
 Legislation, Educational, 880
 Sales Taxes, 198
 Tax Reduction, 205
 Workmen's Compensation, 582
- North Dakota, Electoral Laws, 119
 Law Amendments, 346
 Northampton, Opera at, 859
 Northrop, F. S. C., 781
 Notz, William F., 331
 "Nuclear" Physics, 724
 Processes, Quantum Theory, 725, 726
 Numbers, Theory of, 613, 614
 Nye Committee, 4
- OAKLAND, Calif., City Manager, 135**

INDEX

- Oats, Production of, 407
O'Brien, Robert L., 101
Ocean Atmospheres, 696
Liners, 664
Magnetograph, 693
Oceanography, 697-699
Carnegie Institution, 699
Maps, 705, 706
Scripps Institution, 699
Surveys, 698, 699
Washington Laboratories, 699
Ochs, Adolph S., iv, v
O'Connor, T. V., 101
Oedipus Rex, 858
Oenothera, Papers on, 747
Ohio, Welfare Work, 33
Constitutional Amendment, 118
County Reorganization, 128
Prison Conditions in, 536
Radio Institute, 902
Regional Planning, 130
Sewer Bonds, 144, 145
State University, Publications of, 746
Unemployment Reserves, 584
Oil Conservation Board, Federal, 101
Geology, 222
Industry, Disorganization of, 437
Merger, 113
Production, Military Control of, 432
Stocks, Prices of, 438
Supply of, 431
World Curtailment, 332, 333
Oklahoma, Constitutional Amendments, 118
Fire Instruction, 140
Income Tax, 202
Initiatives, 118
Legislation in, 344
Oil Situation, 437
Old Age Pension Laws, 549
Oligocene Beds, 742
Olmsted, H. M., 148
Olynthos, Successful Finds at, 845
Omaha, Home Rule, 137, 138
O'Neill, Eugene, 861
Ontario, Water Power, 240, 241
Opera, the, and Music, 857-861
Operations, Abdominal Treatment, 768
Complications, Pulmonary, 767
Prophylaxis of, 767, 768
Opium, Conference on, 47
Orchestras in New York, 859
Ordinance, Bureau of, 288
Department (See Army)
Ore Dressing, 433
Shipments, 430
Oregon, Amendments Passed, 346
Civil Service in, 107
Income Tax, 202
Public Utilities Legislation, 235
Tax Reduction, 206
Unemployment Reserves, 584
Organic Chemistry, 711-714
Combustion, 712, 713
Germs, 713, 714
Hydrocarbons, 711, 714
Kerosene, 712
Pyrolysis, 712
Resins, 713
Rubber, 713
Sugars, 713, 714
Evolution, 730, 731
Organization of the Army, 255-257
Navy, 287-291
Organized Social Work, 546-549
Oriental Orthodox Church, 605-607
(See Orthodox Church)
Orthodox-Anglican Agreement, 605-607
Co-operation, 604
Church, Christian Unity, 604, 605
Economic Intercommunion, 604, 605
Lambeth Conference, 605-607
Oyster Industry, Decline in, 426
PACIFIC Coast Earthquakes, 688, 689
States, Fisheries of, 427
Water Power, 240
Ocean, Oceanography, 698, 699
Weather Forecast, 696
Packaged Fish, Decrease of, 426
Pact of Paris, 69
Pagliacci, as Sound Film, 858
Painting, 847-851
Paleobotany, Publications on, 748
Paleontology, Publications on, 742, 743
Vertebrate, 741-743
Palestine, 61
Archeological Finds in, 797
Excavations, 834, 846, 847
Jewish Position in, 609
Literature on, 834
Panama, 168
Canal, Revenues, 247
Statistics, 248
Tolls, 247
Tonnage, 247
War Department, 269
Mail Steamship Co., 486
Relations with U. S., 56, 168
Pan-American-Airways, 53
Commercial Conference, 53
Convention, 43
Air Navigation Arrangement, 43
Treaties, at Havana, 44
Union, 101
Pangborn-Herndon Flight, 700
Papal Encyclicals (See Catholic Church)
Paper Industry, 452
Papyri, Greek, 832
Pardon by Governor, 125
Pardoning Power, 110
Parent-Teacher Association, 554
Parker-Couzens Bill, 479
Parker, Francis LeJau, 154, 157
Parks, George A., 99, 153
Parry, Carl E., 357
Parsifal, 859
Passamaquoddy Dam, 698
Passenger Transit, Statistics of, 484
Patagonia, Exploration, 702
Patent Appeals, United States Court of, 108
Court, 650
Pathology, 759, 760
Hypertension, 759
Pauling's Wave Mechanics, 707, 708
Pay of Federal Employees, 105, 106
Payne, John Barton, 101
Pea Aphid, 416
Peace Maintenance, 254
Religious Resolutions, 591
Peach Trees, Disease of, 416
Peaches, Increase in Crop, 421
Pears, Increase in Crop, 420
Pearson, Paul M., 98, 160
Peirce, Charles S., 779
Penal Conditions and Prisons, 536-540
Case Work, 539
Pennsylvania Academy, 852
Child Labor, 579
Welfare, 542
Housing Law of, 550
Labor Injunctions, 566, 567
Public Service Investigation, 234
Utilities Legislation, 235, 236
Railroad, Electrification of, 648
Socialist Elections, 544, 573, 574
Peoples Gas, Light and Coke Co., 631
Perishable Commodities Act, 419
Perry's Emerson, 815
Persia, 62
Agreement with U. S., 43
Control of Importation, 341
Evidence of Early Horse-manship, 798
Personalities, National, 14-16
Personality Tests, 798, 799
Personnel of the Administration, 92-95
Administration Council, 104, 105
of Congress, 82-88
of the Judiciary, 108, 109
Peru, Deflation of Currency, 372
Production of Copper, 440
Shippee-Johnson Expedition, 701
Petrography and Mineralogy, 689-691
Petroleum, 436-438
Consumption of, 436

INDEX

- Decline in Imports, 437
- Domestic Sales, 436
- Industrial Chemistry, 723
- Production of, 436, 437, 452
- Report on, 459
- Reserves, Naval, 289
- Petunia, Polyploidy in, 749
- Pharmacology, 762-765
- Philadelphia, 107
 - Franklin Institute, Museum, 871
 - Mayor, 133
 - Philharmonic, 860
 - Opera, 858
- Philharmonic Symphony Society, 859
 - Regional Planning, 147
- Philippine Immigration, 512
- Independence, 14
- Islands, 157-160
 - Administrative Investigations, 158
 - Agriculture, 159
 - Earthquakes, 689
 - Economic Conditions, 158, 159
 - Financial Conditions, 158, 159
 - Government, 157, 158
 - Health Conditions, 160
 - Legislation, 158
 - Military Problems, 252
 - Naturalization, 519
 - Public Lands, 159
 - Trade, 159
- Philippines, Bill for Independence, 6
 - "Friendship Project," 600
 - Increased Duties, 341
 - Missions, 597
- Philosophers, Biography of, 779, 780
- Philosophical Miscellany, 779
- and Social Sciences, 778-801
- Philosophy, 778-783
 - Greek, 832
 - History of, 780
 - Literature, 782, 783
 - Papers on, 779
 - Political, 783
 - Science, 780, 781
 - Social, 783
 - Survey of, 778
 - Symposia on, 783
 - Textbooks, 778, 779
 - Themes, 778
- Phonograph, Development in, 501
- Photo-electric Cells, 637
- Photographic Mapping, 217, 218
- Physical and Inorganic Chemistry, 707-711
- Physics, 724-728
 - Atoms, Dynamic Nature, 728
 - Chemistry, and, 707-729
 - Cosmic Rays, 727, 728
 - Gamma Radiation, 725
 - High Speed Ions, 726, 727
 - Light Elements, 724, 725
 - Mathematics and, 615
 - "Nuclear," 724, 725, 726
- Physiognomy, 789
- Physiology, 756-759
 - Adrenal Cortex, 759
 - Emotion, 757
 - Kidney, 758, 759
 - Muscular Activity, 757, 758
 - Nervous System, 756, 758
 - Vitamin A, 757
- Phytochemistry, 717
- Pickle Work, 417
- Pig Iron, Prices of, 438, 439
 - Production, 309
 - Statistics of, 439
- Pi Mu Epsilon Fraternity, 617
 - 117, 550
- Pinchot, Governor, 19, 116, 117
- Pine, White, Blister Rust, 415
- Pinney, Jean B., 552
- Piraeus, Discoveries at, 845
- Pirandello, 865
- Pittsburgh, Carnegie Museum, 742
 - International Art Exhibit, 848, 849
 - Project for Home Building, 551
- Planet, Minister, 340
- Plant Composition, 744
 - Bibliography, 751
 - Cytology, 747
 - Diseases, 414-416
 - Ecology, 748
 - Geography, 748
 - Group, Lower, 745
 - Industry, Bureau of, 401
 - Morphology, 744
 - Physiology, 749
 - Quarantine, 751
- Plants, Genetics, 747
 - Disease Resistance, 750
 - Insect Resistance, 751
 - Sterilization of, 752
- Plaskett, H. H., 623
- Plastics Industry, 722
- Plateau, Problem of, 613
- Platinum vs. Vanadium, 721, 722
- Platt Amendment, 51, 809
 - Elizabeth T., 809
- Pleistocene, the, 742
- Plummer, Norman, 760
- Pluto, 620, 621
- Pneumonia, Enzyme Treatment, 761
 - Operative Care, 767
- Poetry, American, 813, 814
- Poland, Import Quotas, 336
 - Jewish Hostility, 610
- Polar Exploration, Magnetism, 692, 693
- Pole, J. W., 96
- Police Brutality, 165, 166
 - Communication, 139
 - Departments, 532
 - Developments, 139
 - Efficiency, 534
- Policies of President, 10-14
- Poliomyelitis Epidemic, 772
- Political History, 803
 - American, 1-37
- Politics, Communists, 574
 - Institute of, 77, 78
 - Labor in, 572
 - Farmer-Labor Party, 574
 - Socialist Elections, 573
- Pollock, Channing, 863
- Pompeii, Discoveries in, 843
- Pons, Lily, 860
- Ponsot, Commissioner, 61, 62
- Population, Age Classification, 527
 - Age Distribution, 527
 - Alaska, 152
 - Changes in, 455, 456
 - Classification, 525-529
 - Color, 525, 526
 - Decrease, 525
 - Divorce, 529
 - Foreign Born, 510, 526
 - White, 526
 - Gainful Workers, 528, 529
 - Growth, 523
 - Future, 524, 525
 - Illiteracy, 527, 528
 - Immigration, 508-531
 - Marital Conditions, 528
 - Marriages, 529
 - Nativity, 525, 526
 - Rural, 525
 - Sex, 525, 526
 - Statistics, 523-529
 - Unemployment, 529
 - Urban, 525
- Port Records, 248
- Porto Rico, 154-157
 - Economic Conditions, 155, 156
 - Education, 156, 157
 - Finances, 156
 - Government, 154, 155
 - Health Conditions, 157, 556
 - Hurricane Relief, 155
 - Mapping, 300
 - Military Problems, 252
 - Public Works, 156
 - Trade Statistics, 155
- Post-Gatty Flight, 69
- Office Department, 106
 - Members of, 93
 - Leases, 5
- Potash Exploration, Large Deposits of, 431
- Potato, Blight of, 414, 415
 - Beetle, 417
 - Tuber Worm, 417
- Poultry, Decline in Price, 409, 410
 - Production, 397
- Power Commission, Federal, 13, 101
 - Electric (See Electric Power)
 - Trust, Governor Pinchot, 116, 117
- Pratt-Smoot Bill, 840
- Praxiteles, Hermes of, 845
- Presbyterian Church, 594-596
 - United, 595, 596
 - Member Canvass, 595
 - U. S. A., South, 595
- President Hoover (See Hoover, Herbert)
 - and His Policies, 10-14
- Presidential Candidates, Democratic, 16
 - Secretaries, 95
 - Vetoes, 6
- Preventive Work in Delinquency, 540-543
- Pribilof Islands, Fur Seals, 428
- Printing, of Production, 452
- Prisoners, Statistics of, 535
- Prisons, Census Data of, 535
- Disturbances at, 538

INDEX

Employment in, 536
 Improved Construction, 540
 Investigations of, 536
 Labor, Contracts for, 537
 Libraries, 838
 Overcrowding, 537
 Penal Conditions, and, 536-540
 Riots, 538
 Social Need of, 537
 of Tomorrow, 535
 Probation, Federal, 112
 Production, Control of, 331-334
 Professional Education, 884-891
 Progress in Aeronautics, 490-496
 Prohibition Act, Modification, 7
 National, 9, 10
 Admiralty Jurisdiction, 169, 170
 Advisory Research Council, 904
 Amendment, Association Against, 7
 Bail, 112
 Bureau, Enforcement Results, 30
 Civil Service, 102, 103
 Controversy, 27-32
 Depression, effect, 30
 Enforcement appropriations, 30
 by Aircraft, 496
 Federal Prosecutions, 109, 110
 Howell Bill, 6
 Labor Efficiency, 27
 New Plan, Liquor Control, 29
 Social Benefits, 27
 State Recommendations, 115
 Treasury Report, 103
 Property and Land Taxes, 205-209
 Tax Administration, 208
 Assessment, 206
 Classification, 208
 Delinquencies, 208, 209
 Exemption, 207
 Legislation, 200
 Levies, 206, 207
 Operation, 208
 Reduction, 205, 206
 Situs, 208
 Substitutes, 208
 Proteins, Agricultural Chemistry, 717
 Protestant Books, 587
 Church Statistics, 587-590
 Denominational Activities, 586-597
 Episcopal Church, 592
 Protestant, Methodist (See Methodist)
 Observances Increased, 586, 587
 Protestantism Reviewed, 586, 587
 Protozoa, Cytology, 735
 Genetics, 735
 Metabolism, 735
 Morphology of, 735

Physiology, 735
 Providence, Board of Public Safety, 136
 Traffic Survey, 243
 Proximate Cause, 123
 Pseudoscience, Opposition to, 784
 Psychological Association, American, 784
 Test Problems, 800
 Psychology, 784-789
 Abnormal, 789
 Behavioristic Aspects, 785
 Conferences on, 784, 785
 Dictionary of, 786
 Educational, 786
 Evolutionary, 786
 Experimental, Texts on, 786
 Field of, 784, 785
 Gestalt, 785, 786
 Laboratory Course of, 786
 Problems of, 784
 Social, 792
 Studies on, 785, 786
 Theory of, 785
 Works on, 788, 789
 Public Administration Clearing House, 145, 146
 Buildings, Sculptures in, 853
 Wages in Contracts, 9
 Debt Retirement, 187, 188
 of the United States, 185-189
 Domain Commission, 224
 Committee, 224, 225
 Finance and Taxation, 172-215
 Health and Hygiene, 771-773
 Hygiene, 771-773
 Asbestos Dust, 772, 773
 Ice Cream Sanitation, 772
 Industrial, 772, 773
 Milk Supervision, 772
 New York, 771, 772
 Rural, 773
 White House Conference, 771
 Lands, 228-232
 Area, 228, 229
 Entered, 230, 231
 Expenditures, 230
 Field Service, 230
 Leases, 231
 Patented, 230
 Prosecution, 112
 Receipts, 229, 230
 Survey, 230, 231
 Withdrawals, 232
 Ownership of Water Power, 238-241
 Protection of Securities, 344-346
 Regulation of Commodity Futures Markets, 341-343
 Resources and Utilities, 216-251
 Service Commissions, 232-235
 Defects, 233
 Investigation, 234
 Rate Base, 233, 234
 Revisions, 233-235
 Valuation, 233, 234
 Utilities, Employment Conditions, 575

Municipal Ownership, 235-238
 Taxes, 199, 200
 Works, Construction of, 454
 Employment, 566, 571
 Labor Hours, 569
 Wage Rates, 566
 Pyrites and Sulphur, 720
 Pyrolysis, 712

QUARTERMASTER Corps, (see Army)

RACE Composition, Statistics, 508, 509
 Conditions, Chinese, 510, 511
 Deportation, 511
 Mexican, 511, 512
 Negro, 511
 In the United States, 508-512
 Hawaiian Numbers, 512
 Immigration Problems, 513-518
 Integrity Laws, 511
 Migration Reduction, 509
 Pacific Coast Immigration, 512
 Population Change, 508, 509
 Trends, 508
 Radcliffe, Lewis, 424
 Radiation, Artificial Gamma, 725
 Radio, the, 497-501
 Act, 20
 Adult Education, 902
 Aircraft, 501
 Amateur, 501
 Army Use, 262
 Aviation, 491
 Broadcasting, 497, 498, 499
 Visual (see Television)
 Catholic Church, 603
 City, 497, 855
 Commercial Communications, 500
 Commission, Federal 19, 101
 Corporation of America, 499
 Education, Annual Assembly, 902
 Fire Prevention, 141
 Government Regulation, 501
 Industry, Effect of Depression, 498
 Litigation, 497
 Institute in Ohio, 902
 Library Cooperation, 838
 Marine, 500
 Mechanical Improvements, 498
 Monopoly, 20
 Motion Pictures with, 501
 Musical Instruments, 501
 National Committees, 875
 Naval Airplanes, 301
 Photoelectric Tube, 502
 Problems in, 649
 Programs, Wired, 649
 Receivers, 499
 Religious Services, 601
 Research Bureau, 875
 School Programs, 874, 875
 Statistics of Sales, 498
 Talks, on Psychology, 784

INDEX

- Technical Advances, 497
- Transmitters, 499
- Tubes, 499, 500, 649
- Rahway Reformatory Strike, 538
- Railroad, Alaskan, 99, 152
 - Administration, U. S., 101
 - Competition with, 307, 308
 - Dividends, 329
 - Efficiency of Service, 473
 - Employees, Classification, 328
 - Statistics of, 328
 - Equipment, 326
 - Expenditures, 471
 - Facilities, 470
 - Freight Service, 472
 - Merger, 21
 - Mileage, 325
 - Operating Expenses, 472
 - Passenger Service, 472
 - Personnel, Wages, 327
 - Petition for Increase in Rate, 22
 - Property Investment, 471
 - Purchases, 473
 - Reverses, 307
 - Shares, 306
 - Taxes, 329
 - Traffic and Earnings, 325-331
 - Valuation, 112, 113
 - Wages, 470
- Railroads, 469-473
 - Airplane Competition, 639
 - Boulder City, 224
 - Bus Competition, 639
 - Capital Stock, Increase in, 327
 - Carrying Capacity of, 471
 - Competition with, 470
 - Consolidation of, 470
 - Construction of, 326
 - Decrease in Freight Cars, 471
 - Earnings, 328
 - Ton-Mile, 329
 - Statistics, 329
 - Effect of Depression on, 469
 - Efficiency Factors, 638
 - Electrical Device, 648
 - Employment Conditions, 575
 - Equipment, Improvement of, 327
 - Freight Cars, Statistics, 326
 - Rates, 22
 - Revenue, 328, 471, 472
 - Traffic, 329
 - Labor Mediation, 577, 578
 - Locomotives, 639
 - Statistics of, 326
 - Operating Expenses, 328
 - Statistics of, 329
 - Passenger Cars, Statistics, 327
 - Revenue, 328, 472
 - Statistics of, 330
 - Property Investment, Statistics, 327
 - Rate Pooling Plan, 469
 - Speed, 639
 - Splawn, Report on, 470
 - Statistics of Miles Operated, 326
 - Payments, 329
- Revenues, 328
- Tonnage, Statistics of, 330
- Trackage Miles, Statistics, 326
- Railways, Employees, 471
- Executives, Association of, 22
- Haifa-Bagdad, 62
- Maintenance, 473
- Manchuria, 59
- Motors, 648
- Operating Ratio, 473
 - Statistics, 329
- Rate of Return, 473
- Revenue Problems, 469
- Statistics, 331
- Taxes, 473
- Rainey, Henry, 6
- Ralston, Colonel R. R., 101
- Ramdohrte, 690
- Rand School Anniversary, 546
- Ranger, U. S. S., 300
- Rapid Transit, Developments in, 483
- Raskob, John J., 31
- Rastall, H. W., 681
- Rayon Production, 722
- Reading, Mayor, 133
- Socialist Elections, 573
- Transportation in, 648
- Real Estate, Army, 267
 - Burdens, 454
 - Tax Rates, 454
 - Values, Collapse of, 354
- Reclamation Applications, 232
 - Bureau of, 217
 - Irrigation, 223-228
 - Statistics, 226
- Red Cross, American National, 101
 - Drought Relief, 548
- Reforestation Amendment, 33
- Reformed Church in America, 596
- Refrigeration, by Electrolysis, 637
- Regional Planning, 129, 130
- Registration Areas, 773
- Reid, A. Duncan, 379
- Religion, Baptists (see Baptists)
- Birth Control, 594, 599, 600
- Christian Churches (see Christian)
- Education, 598, 599
- Unity, 603, 604
- Congregational Churches (see Congregational)
- Denominational Coöperation, 601
- Disciples of Christ, 591, 592
- Education, 887, 888
- Evangelical Church, 592, 593
- Federal Council of Churches, 599-601
- Greek, 832
- Hebrew Literature, 834
- Interdenominational Activities, 597-602
- International Relations, 601
- Judaism (see Judaism, Jewish)
- Labor Politics, 573
- Lambeth Conference, 604, 605-607
- Lutherans, 593
- Methodists (see Methodists)
- Missions, Foreign, 597, 598
 - Home, 598, 599
 - Survey, 597, 598
- Motion Pictures, 600
- Negro Awards, 600
- Orthodox Church (see Orthodox Church)
- Peace Resolutions, 591
- Presbyterians (see Presbyterians)
- Protestant (see Protestant)
- Radio, 601
- Reformed Churches (see Reformed Church)
- Religious Organizations, 536-612
- Roman Catholic Church (see Catholic Church)
- Social Service, 600
- Symposia on, 783
- Toyohiko Kagawa, 598
- United Brethren in Christ, 590
- War and Militarism, 595
 - Y. M. C. A., 601, 602
 - Y. W. C. A., 602
- Removal Power, 125
- Repatriation, 522
- Representatives, Elections, Statistics of, 32
 - Government Experience, 86
 - House of, 14
 - Mortality of, 32
 - Personal Data, 85-88
- Reproductive System, 782
- Reptiles, Museum Exhibits, 742
- Republican National Committee, Prohibition Issue, 32
 - Convention, 7
- Research Council, National, 906
 - Social Science, 906
 - Developments, 906
 - Fellowships for, 905
 - Pure, in Educational Institutions, 904-907
- Reserve Officers' Training Courses, 304
- Resins, Chemistry of, 713
- Rhodes, Discoveries at, 844
 - Scholarships, 304
- Rhokana Corporation, Control of Copper Mine, 442
- Rice, Calvin W., 633
 - Elmer, 862
 - Production of, 406
- Richards, Bernard G., 607
 - Charles R., 870
- Richardson, L. S., 410
- Riggs, Lynn, 863
- Ringling Art Museum, John and Mabel, 851
- Ritchie, Albert C., Presidential Candidate, 16
- River and Harbor Act, 280, 282, 283, 285
- Vessels, 664
- Harbors and Flood Control, 177
- Surveys of, 285
- Rivera, Diego, Murals of, 848

INDEX

Roads, Bureau of Public, 217
 Roadside Improvement, 143
 Roan Antelope Copper Mine, Statistics of, 442
 Roback, A. A., 778
 Robbins-Jones Flight, 700
 Roberts, Elizabeth Maddox, 812
 Robinson, Edward Arlington, 814
 Joseph T., 15
 Leland R., 346
 Rochester, Work of Delinquent Nature, 542
 Music Festival, 860
 Traffic, 243
 Unemployment Measures, 577
 Rockefeller, Library Grant, 841
 Rody-Willy, Flight, 700
 Rogers Act, 38
 Rolfe, John C., 827
 Roman Catholic Church, 602-604
 Religion, Literature, 829
 Romance Languages, 836
 Literature, 825-827
 Notable Studies, 825
 Literature, 825-827
 Bibliographies, 825
 Rome, Finding of Neanderthal Skull, 843
 Root, E. S., 98, 161
 Elihu, 49
 Stock, Supply of, 421
 Roosevelt, Franklin D., 33, 155, 237
 Presidential Candidate, 16
 Theodore, Jr., 15
 Rope Strand Cable Suspension Bridge, 625
 Ross, W. A., 893
 Rotenene, Insect Poison, 753
 Rover, Leo A., 109
 Rowe, L. S., 101
 Rubber, Chemistry of, 713
 Rubio, President, 51, 54
 Rural and County Government, 126-130
 Hygiene, 773
 Library Experiments, 837
 Roads, Mileage of, 474, 475
 Russell, C. A., 18
 H. N., 623
 Russia, Excavations in, 847
 Rye, Value of, 406

SABRATHA Excavated, 844
 St. Lawrence Power Development, 237
 Project, 238
 River Route, 247
 St. Louis Orchestra, 860
 St. Paul, Regional Planning, 147
 Salassie, Emperor Haile, 61
 Saleine Process, 435
 Salmon Catch, Decrease, 427
 Saltzman, Charles McK., 101
 Salvador, 53
 Sandino, 53, 55
 San Francisco, 240
 Bay, Military Significance, 253

City-County Consolidation, 129
 Contributions to Mural Painting, 849
 -Oakland Bridge, 626, 632
 Orchestra, 860
 "Strong Mayor," 136
 Saposs, David J., 572
 Savannah, Parking, 245
 Savings Banks, Statistics of, 366-368
 Institutions, 367
 Scandinavia Abandons Gold Standard, 370
 Schairerite, 639
 Schiefelin, William Jay, 132
 Schilling, William F., 17
 Schilt, Jan, 623
 Schizophrenia, 789
 Schnitman, L. Seth, 451
 Scholasticism, 783
 Schools in District of Columbia, 164
 Summer, for Adult Education, 903
 Schuyler, William M., 95, 108
 Sciences, Biological, 730-755
 National Academy, 101
 Symposia on, 783
 Scouting Force, 291
 Scripps Institution of Oceanography, 699
 Sculpture, 851-854
 American, in Europe, 853
 Animal, 852
 Awards for, 853
 Civic, 853
 Garden, 852
 Seabury, Samuel, 131
 Seamanite, 689
 Search Warrant, 112
 Seattle, Recall Election, 133, 134
 Traffic, 243
 Water Power, 240
 Secondary Education, 877-880
 Secretary of Labor, Immigration, 518
 Securities, Public Protection of, 344-346
 Security Markets (see Business)
 Money Markets, 312-317
 Seed Germination, 743
 Semitic Languages and Literature, 833-835
 Literature, 833-835
 Cuneiform Texts, 835
 Hebrew Law, 834
 Josephus, 835
 Palestine, 834
 Senate, The, 15
 Banking Investigation, 21
 Survey, 361, 362
 Members of, 88, 89
 Vacancies, 33
 Senators, Personal Data, 82-85
 Political Experience, 84
 Serendite, 690
 Seventy-first Congress, Aid for Veterans, 3
 Appropriations, Statistics, 183
 Banking Situation, 21

Controversies, 1
 Drought Relief, 1
 Filibuster, 5
 Fund for Agricultural Credit, 399, 400
 Legislation on Mental Hygiene, 558
 Muscle Shoals, 3, 4
 Unemployment Relief, 2
 Seventy-second Congress, Democratic Gain, 6
 First Session, 6
 Shackleton Expedition, 809
 Shad, Value of Catch, 426
 Shakespeare, 821
 Shakespearean Contemporaries, 821
 Sheep, Strides in Industry, 409
 Sheets, E. W., 408
 Sheldon, Preston King, 246
 Sherman Anti-Trust Law, 432
 Sherwood, Robert, 863
 Shih, Hu, 79
 Ship Construction, 485
 Shipbuilding Achievement, 662
 Analysis of, 661
 Conversion, 664, 665
 Development in, 657
 Great Lakes, 662
 Hull Forms, 657
 Investigation, 661
 Materials, 658
 Merchant, Progress in, 661
 Policy, 290
 Superstructure, 657
 Ship Yards, West Coast, 661
 Shippee-Johnson Expedition, 701
 Shipping, Admiralty Jurisdiction, 170, 171
 Agreement with Foreign Countries, 43
 Board Services, 489
 United States, 101
 In Guam, 162
 Intercoastal Traffic, 247
 Ships, Cargo, 661
 Passenger Accommodations, 659
 Shoe Industry, 565
 Shoes, Production of, 452
 Short, Lloyd M., 17
 Selling, 342, 343
 Shot Hole Bores, Result of Drought, 417
 Shurtleff, Flavel, 147
 Sidky Pasha, Premier, 61
 Sidney, 820
 Signal Corps (see Army)
 Silbermann Decision, 131
 Silicon-Manganese, Steel Alloys, 440
 Silver and Gold, 443-447
 Standard of Far East Countries, 371
 Value of, 444
 Simonson, Lee, 858
 Sinclair, Upton, 812
 Sisson, Francis H., 185
 Sitterley, Bancroft W., 617
 Skeletal Muscle, 757, 758
 Slater's Wave Mechanics, 708
 Slichter, Sumner H., 574
 Smart, H. R., 781
 Smith, Alfred E., 16, 33

INDEX

- Smith, George O., 101
 Herbert A., 422
 -Hughes Act, 896
 Paul J., 665
 Smithsonian Institution, 101, 496
 Smoot-Hawley Tariff Law, 45
 Snell, Representative, 6
 Snyder, Edgar C., 109
 Peter F., 513
 Social History, 803
 Hygiene, 552-556
 Association, Division of
 Family Relations, 556
 Church Work in, 554
 College Courses, 553
 Conference Programs, 553
 Economic Depression, 552, 553
 Educational Work, 553
 Experiments in High-schools, 554
 Gains in Work, 553
 Journals of, 553
 Legislation in, 554
 National Organizations, 553
 Nursing Service for, 555
 Prostitution, 554
 Seamen's Health Protection, 555
 Societies, 553
 Instruction in Venereal Diseases, 555
 Medical Measures of, 555
 Protection from Illegal Practices, 555
 Vice Conditions, 554
 Problems and Conditions, 552-564
 Sciences, Fellowships in, 791
 Needs of, 791
 Philosophical and, 778-801
 Service, Church, 600
 Limitations, 548
 Trends, Study of, 791
 Work, Agencies for, 547
 City Appropriations for, 549
 Community Chests, 547
 Conferences on, 549
 Economic Relief, 546
 Federal Aid, 547
 Funds for, 547
 International Conference, 549
 National Conference, 549
 Organized, 546-549
 Programs, 547
 Publications on, 549
 Relief for, 548
 Unemployed Aid, 548
 Welfare Programs, 549
 Socialism, 543-546
 Broadcasting, 546
 Debates on, 545
 Definition of, 543
 Greek Paper, 543
 Publications on, 545
 Socialist-Communist Party, 545
 Election Results, 573
 Labor Party, 543
 National Convention, 543
 Party, Presidential Situation, 545
 Electoral gains, 544
 New York Conference, 544
 Organizations, 545
 Personnel of, 546
 Sociological Research, 790
 Cultural, 791
 Educational, 792
 Personnel, 546
 Problem of Research, 791
 Range of Study, 790
 Research Professorship in, 793
 Rural, 792
 Society, American, 790, 791
 Sociology, 790-794
 Studies of the Family, 792
 Textbooks on, 792, 793
 Work at Universities, 793
 Sod Webworms, Damage by, 416
 Sodium Thiosulphate, 764
 Sokoloff, Dr. Nahum, 61
 Soldier Bonus, 11
 South America, Economic Situation, 56
 Exchange, Fluctuations in, 371
 Statistics, 371
 Explorations, 703
 Government Recognition, 53
 Travel Books, 810
 United States, The, 56, 57
 Atlantic States, Fisheries of, 426
 Carolina, Public Service Investigation, 234
 Dakota, Gold and Silver Output, 447
 Library Progress, 837
 Southerland, Howard, 101
 Spain, Excavations in, 797
 Spanish Economy, 336, 337
 Literature, 827
 Speaker of House of Representatives, 85
 Speer, Robert K., 874
 Spelman Fund, 146
 Spenser, 820
 Spheres of American Influence, 166-169
 Spinal Anaesthesia, 765, 766
 Splawn Report on Railroads, 470
 Spoils System, 93
 Spruce Budworm, Destruction by, 417
 Stainerite, 690
 Stars, Rotating, 622
 State Administration, 124-126
 Reorganization, 125, 126
 Banks, 364
 Liabilities Statistics, 364
 Resource Statistics, 364
 Trust Departments of, 365
 Birth Registration Area, 776
 Centralization, 126
 College Incomes, 880
 Constitutional Amendments, 117, 118
 Department, Members of, 95, 96
 Electoral Laws, 118-120
 Expenditures, 193
 Finance, 189-193
 New Tax Bases, 191-193
 Legislation, 190, 191
 Organized Activities, 190
 Tax Situation, 189-191
 Fiscal Administration, 128, 129
 General Elections, 120
 Geological Surveys, 219-223
 Geology, Basic, 219-221
 Economic, 221, 222
 Government, 115-130
 Governors' Recommendations, 127
 History, 804, 805
 Hydroelectric Developments, 239, 240
 Improvement of Highways, 475
 Income Tax, 201-205
 Revenue, 204, 205
 Statistics, 203-205
 Indebtedness, 193
 Initiatives, 118
 Judicial Systems, 124
 Mediation, 578
 Pacts, Control Natural Resources, 334
 Receipts, 193
 Redistricting, 115
 Referenda, 118, 120
 Revenue, 191-193
 Handicaps, 402
 School Readjustment, 879
 System of Highways, 474
 Tax Bases, 191-193
 Taxes, Banks, 193
 Chain Stores, 192, 193
 Corporation, 192
 Death Duties, 191, 192
 Gasoline, 192
 Income, 191
 Inheritance, 192
 Property, 191
 Sales and Commodity, 191
 Traffic Control, 244
 Voting, 117
 Water Division, 117
 -Wide Regional Planning, 147
 States, Constitutional Amendments, 115, 116
 Initiatives and Referenda, 117, 118
 Death Registration Area, 774
 Federal Aid to, 116, 402
 National and Interstate Relations of, 115-117
 Stateville, Prison Riot, 538
 Statistics of Airplane Production, 679
 Army School Courses, 271, 272
 Strength, 257-259
 Arrests, 535
 Babson's Index Numbers, 310, 311
 Bank, 353, 359, 363, 364, 366-368
 Birth Registration Area, 524, 776
 Budget Estimates, 180
 Check Transactions, 319

INDEX

- City Government Forms, 134, 135
- Commerce, 284, 285
- Congressional Appropriations, 183
- Corporate financing, 311
- Crimes, 533, 534
- Death Registration Area, 524, 774, 775
- Divorces, 529
- Electric Light and Power, 249
- Employment Conditions, 575
- Exchange Quotations, 370
- Rates, 369
- Federal Appropriations, 172-174, 226
- Irrigation Projects, 227
- Reserve Bank Credit, 357
- Fisheries, 428
- Foreign Trade, 320, 321, 324
- Fraternal Insurance, 377
- Gasoline Tax, 215
- Gold Reserve, 361
- Hawaiian Population, 153
- Race Numbers, 512
- Highways, 475
- Immigration, Pacific Coast, 512
- Income Tax, Federal, 201
- State, 203-205
- Insurance, 374, 377
- International, 74
- Life Insurance, 373, 374, 376
- Manufactures, 452, 453, 502-505
- Marriages, 529
- Money, 317, 444
- Motor Bus Operatives, 479, 480
- Municipal Expenditures, 194-198
- Mutual Savings Banks, 367
- Naturalized Persons, 522
- Negro Migration, 511
- Panama Canal, 248
- Passenger Transit, 484
- Population, 523-529
- Porto Rican Trade, 155
- Protestant Membership, 588-590
- Public Lands, 229, 230
- Race, 503, 509
- Radio Sales, 498
- Railroads, 328-331
- Security Market Prices, 316
- South American Exchange, 371
- Traffic, 283, 284
- Trust Companies, 365
- Unemployment Rates, 576
- Vital, 773-776
- Steam Power, 663
- Steamship Schedules, 112
- Turbine Electric Horsepower, 648
- Steel, alloy, in shipbuilding, 658
- Industry, American, review of, 438
- Iron, 438-440
- Output, Statistics of, 439
- Plant Operations, 430
- Prices of, 439
- Production of, 452
- Rustless, 439
- Stainless, 639
- Stephensen, Gilbert T., 354
- Stevens, Neil E., 414
- Stewart, Ethelbert, 565, 577
- Stiles, Percy G., 756
- Stimson, Henry L., 14, 48, 52, 53, 55, 60, 68, 95, and Manchuria, 69, 72, 73 and Nicaragua, 167, 168
- Stock Market (See Business) and Moratorium, 24
- Transactions, 312, 313
- Stocks, Carl W., 477
- Stokowski, Leopold, 860
- Stone, James C., 15, 16, 17, 101
- William T., 66
- Street and Highway Traffic Regulation, 242-246
- Railways, Arbitration, 578, 579
- Stribling, T. S., 812
- Strong, Wendell M., 373
- Structural Engineering, 625-633
- Stuart, Graham H., 52
- Sturtite, 690
- Submarines, 29, 295, 296, 298
- Subpoena Enforcement, 113
- Sugar, Chemistry of, 713-715
- Production of, 331, 332
- Sully's Hill National Park, 403
- Sulphur and Pyrites, 720
- Supreme Court of the United States, 108, 109
- Surgery, 765-768
- Survey, Coast and Geodetic, 216, 219
- Geological, 216
- Lake, 217
- Public Lands, 230, 231
- Surveys, Geographic, 101, 218, 219, 691, 692
- State Geological, 219-223
- Sweetser, Arthur, 71
- Swine, Marketing of, 409
- Swope, Bernard, 642
- Syria, 61, 62
- System of Highways, 474
- TALKING** Pictures, Educational, 875, 876
- Tammany Tickets, 132
- Tanning Chemistry, 716, 717
- Tarkington, Booth, 812
- Tariff Act, 457, 458, 459, 460
- Administrations of, 456-459
- Commission, Duties of, 459
- European Representation, 459
- Organization of, 459
- Personnel, 23, 459
- Rates of Duty, Determined, 463
- Report on Industries, 461, 462
- United States, 101, 459-463
- Measures, in Foreign Countries, 337
- Foreign Changes in, 335
- For Revenue Purposes, 335
- Increase on Exports, 418
- Inquiries, 23
- Law, Smoot-Hawley, 45
- Revision, 11
- Union, 62, 63
- Tauber, Richard, 860
- Tax Appeals, United States Board of, 101
- Taxes, Automobile (See Automobile Taxes)
- Bank (See Bank Tax)
- Commissions, 200, 201, 205
- Corporation (See Corporation Taxes)
- Delinquencies, 208, 209
- Escape Problem, 206
- Exemption, 207
- Gasoline (See Gasoline Tax)
- Income (See Income Tax)
- Inheritance (See Inheritance Tax)
- Land (See Land Taxes)
- Legislation, 198-201
- Chain Stores, 200
- Moratoria, 205
- Property (See Property Tax)
- Public Utilities, 199, 200
- Railways, 473
- Rate Control, 200
- Outlook, 187
- Reduction, 205, 206
- Refunds, 182
- Scale Problem, 186, 187
- State (See State Taxes)
- Tobacco, 198
- Utility, 642, 643
- Taxation, Balanced Budget, 178
- Budget Consideration, 187
- Congress, 182
- Public Finance and, 172-215
- State Finance, 189-191
- Taxonomy, 745
- Taylor, Hugh S., 707
- William A., 420
- Teacher Demand and Supply, 891
- Teachers, Education for, 890, 891
- College, Experimental, 890, 891
- Teague, C. C., 17
- Telemetering, 645
- Telephone, Armored Buried Cable, 649
- Cable Insulation, 649
- Service, Radio, 650
- Television in, 650
- Telephotography, 650
- Teletypewriter Service, 649
- Television, 497, 500
- Broadcasting, 649
- Tennessee, Unemployment Investigation, 584
- Territorial Officials, 99
- Territories and Spheres of Influence, 151-171
- Terrestrial Magnetism, 691-694
- Texas, Child Labor, 579
- Gulf Ports, 248
- Oil Situation in, 437
- Potash Deposit, 431
- Textiles, Increase, 452
- Industry, Developments in, 638

INDEX

- Theatre, 861-865
 Depression effect, 861
 Group, 863
 Guild, 862, 863
 Revivals in, 865
 Thomas, Norman, 544
 Robert S., 252, 255, 260, 269, 271
 Senator, 5
 Thompson, Sam H., 17
 Thorndike, Edward L., 900
 Timber Conservation Board, 424
 Supply of, 423
 Tobacco, Decline of, 452
 Mildew, 414
 Tax, 198
 Tokio, Earthquake requirement, 632
 Toll Bridges, 625
 Tombaugh, C. W., 624
 Toronto, University of, Observatory at, 618
 Torts, 122
 Toscanini, Arturo, 859
 Trade Balances, Classes of, 464
 Service, 464
 Chemicals, 723
 Claims, Board of, 566
 Commission, Federal, 101
 Controls, Foreign Tariffs and, 334-341
 Export (See Export Trade)
 Foreign, 319-325
 Import (See Import Trade)
 in Philippine Islands, 159
 Traffic, Airmarkers, 244
 Conditions, 483
 Devices, 245
 Engineering, 243
 Expedition of, 245, 246
 Laws in District of Columbia, 163, 164
 Legislation, 244
 Lighting, 244
 Regulation, Street and Highway, 242-246
 Safety, 243
 Street, 243, 244
 Transportation, Growth in, 483
 Water, 281
 Travel, 809, 810
 Literature, 809, 810
 Traylor, Melvin A., Presidential Candidate, 16
 Treasury Borrowings, 184
 Deficit, 185
 Department Appropriations, 175
 Members of, 96, 97
 Treaties, Bilateral, 42
 Multilateral, 42
 U. S., 42-44
 Treaty, London Naval, 42
 Nine-Power, 60
 Policy, 44
 Trench Mouth, Dental Study, 770
 Trolley Bus, Operation, 482
 Trust Actions, 113
 Banking, 354-356
 Companies, Banks, 363-368
 Statistics of, 365
 Funds, Uniform, 347
 Institutions, Classified, 356
 Increase in Members, 356
 Resources of, 356
 Statistics of, 356
 Policy Trend, 113
 Trusts, Investment, in the United States, 346-351
 Law Reform, 122
 Truesdell, Leon E., 523
 Tsanoff, R. A., 782
 Tucker, F. G., 724
 Tujunga Dam, 629, 630
 Tungsten Plating Process, 907
 Tupper, Ernest A., 467
 Turbine Machine Design, 660
 Turkey, 60, 61
 Discoveries, 847
 Limits Import, 336
 Turkeys, Decrease in Number, 410
 Turner, Scott, 94, 95, 440
 Tutankhamen's Tomb, 846
 Types of Municipal Government, 134-138
 ULTRA-VIOLET Radiation, 647
 Unemployment Appropriations, 577
 Building Construction, 142, 454
 Commissions, 571, 584
 Conference of Governors, 117
 Gifford Committee, 576
 Insurance, 576
 Legislation, 576, 577
 Municipal Loans, 144
 Relief, 2, 571, 576
 Reserves, 584
 Rochester Measures, 577
 School Enrolment, 878
 Statistics, 576
 Volume of, 575, 576
 Woods' Committee, 576
 Uniform Sale of Securities Act, 344
 Trust Funds, 347, 348
 Union (See Labor Union)
 United Fruit Line, 486
 United States and Armaments Conference, 68
 Asiatic Fleet, 291
 Attorney's Office, 109
 Board of Mediation, 101, 577, 578
 of Tax Appeals, 101
 Brazilian Trade, 56
 Bureau of Efficiency, 100
 Caribbean, the, 54-56
 Chilean Trade, 56, 57
 Circuit Court of Appeals, 108
 Court of Claims, 109
 of Customs and Patent Appeals, 108, 111
 Criticized, 70
 Cuban Relations, 55, 168, 169
 Customs Court, 109
 Debts, Attitude, 44, 45
 Disarmament, 72
 Attitude, 46
 Earthquakes, 688
 Employees' Compensation Commission, 101
 Fisheries of the, 424-428
 Fleet, 290
 Foreign Service of, 38-41
 Visitors to, 50
 Geographic Board, 101
 Gold Production, 443
 Haitian Relations, 54, 55, 166, 167
 Honduras Relations, 55, 56
 International Labor Office, 71-77
 Situations Affecting, 38-81
 Investment Trusts in, 346-351
 Japanese Relations, 60
 Latin-American Relations, 50, 52-57
 League Conferences, 67
 Council Table, 73
 of Nations, 47, 71-77
 Liberia, 75
 Lines, Fleet, 489, 490
 London Treaty Provisions, 299
 Manchuria, 47, 48, 72, 73, 290
 Marine Corps, 290
 Marshal's Office, 109
 Mexican Relations, 53, 54
 Military Problems of the, 252-255
 Mint, Report of, 443
 Money, Statistics of, 444
 Narcotic Drugs, 67, 68, 75, 76
 Naval Academy, 303
 Nicaraguan Relations, 55, 167, 168
 Nine-Power Treaty, 60
 Panaman Relations, 56, 168
 Population Statistics, 523-529
 Public Debt of, 185-189
 Race Conditions in, 508-512
 Railroad Administration, 101
 Reparation Attitude, 44, 45
 Shipping Board, 101
 Appropriations, 175
 Silver Mining, 444
 Silver Production, 443
 South America, 56, 57
 Supreme Court of, 108
 Water Supply, 241
 Tariff Commission, 101, 459-463
 Treaties, 42-44
 Treaty with Canada, 169
 Weather Bureau, 695
 World Affairs, 44-52
 Court, 49, 71-77
 Ur, Deposits Found, 845, 846
 Utah, Gold and Silver Yield, 447
 Income Tax, 202
 Utilities, Public, (See Public Utilities)
 VANADIUM vs. Platinum, 721, 722
 Vandalia Prison Farm, Riot at, 538
 Vegetable Oils, Investigation of, 460

INDEX

Food Quality in, 422
 Price of, 397
 Vegetation, Regional, Papers on, 748
 Venezuela, Exploration, 704
 Vergil, Bimillennium, 827, 828
 Vermont, Income Tax, 202
 Versailles Treaty, 24
 Vertebrate Paleontology, 741-743
 Zoology, 731-734
 Vestal Copyright Bill, 5
 Veterans' Act, World War, 277
 Administration, 101
 Appropriations, 175
 Beneficiaries, 277
 Departments, 276
 Disbursements, 280
 Employment, 278
 Hospital Admissions, 279
 Pensioners, 277
 Affairs, Administration of, 276-280
 Aid for, 3
 Bill, 10
 Bonus Loan Act, 181, 182
 Disability Claims, 113
 Insurance Beneficiaries, 113
 Preference Rule, 103, 104
 World War, Compensation to, 277
 Insurance, 278
 Vetoes, Pocket, 4, 6
 Victrola Records, 861
 Vienna Congress, 544
 Vincent, Stenio, 54, 166
 Virgin Islands, 160, 161
 Government, 160
 Industries, 161
 Population, 160, 161
 Rehabilitation, 161
 Virginia, "Blue Sky" Law in, 344
 County Government, 128
 Fiscal Administration, 129
 Socialist Elections, 573, 574
 Vision, Work on, 786, 787
 Vital Statistics, 773-776
 Vitamin A, 749, 757, 762
 D, 762
 Vitamins, 762
 Agricultural Chemistry, 717
 Vocational Education (See Education, Vocational)
 in an Industrial Center, 895, 896
 Unemployment in Wisconsin and, 897, 898
 Rehabilitation, 569, 582
 Volcanoes, 689
 Volstead Act, 28, 30
 Volume of Banking Transactions, 317-319
 Volunteer Naval Reserve, 291
 Von Gronau Flight, 700
 Voters Service Lectures, 903
 Voting, State, 117

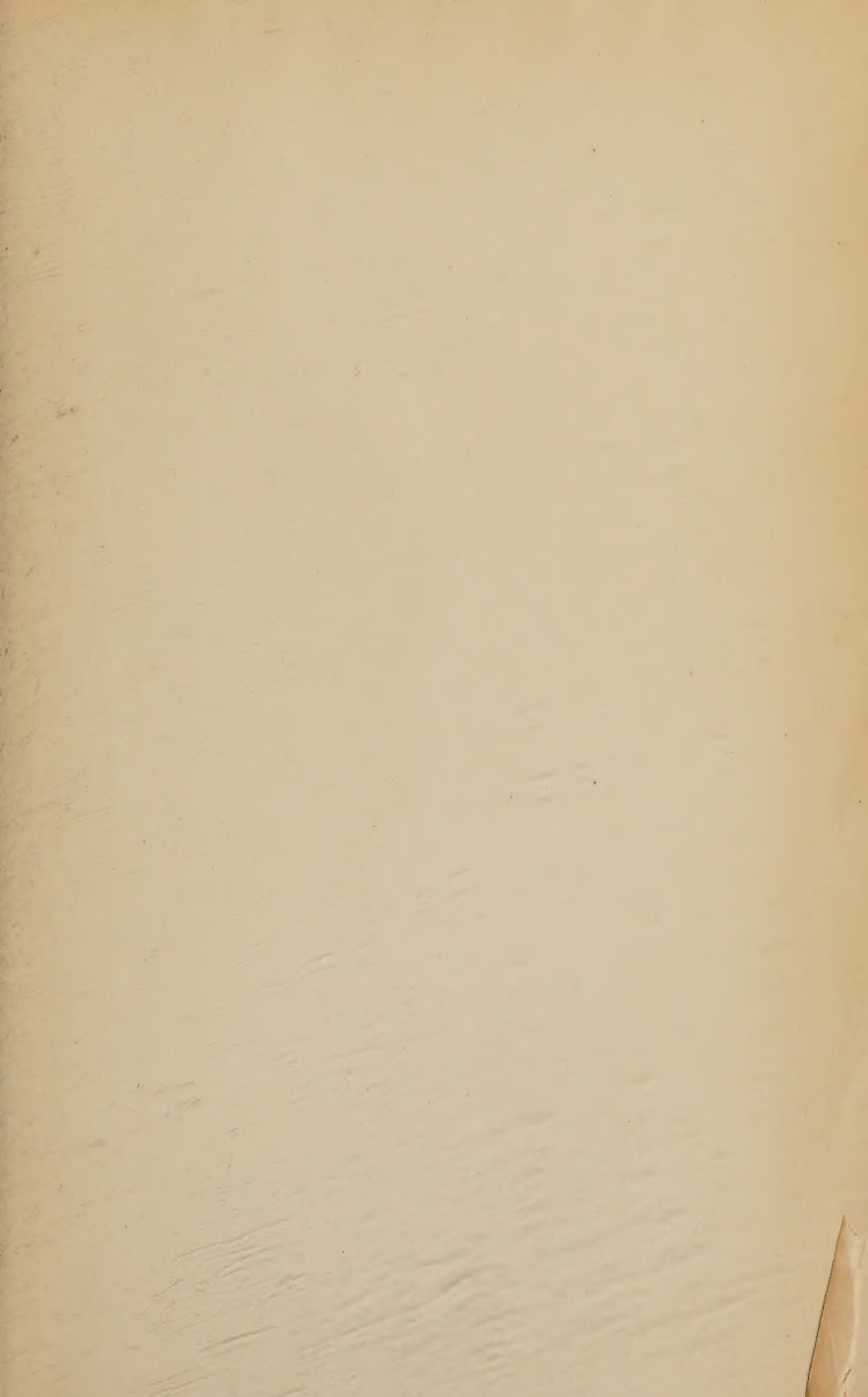
WAGE Claims Court, 567
 Legislation, 569
 Wagner Act, 3, 3, 10
 Senator, 2, 576, 577
 Walters, Henry, Museum, 851

Wanchope, Sir Arthur Grenfell, 61
 War Debt Moratorium, 13, 23-27
 Debts, 189
 Department Appropriations, 176
 Building Program, 176
 Members of, 97
 Muscle Shoals, 253
 Organization, 255
 Panama Canal, 269
 Relief Work, 253, 254
 Rivers and Harbors, 252, 253
 Finance Corporation, 353
 Policies Commission, 254
 Risk Insurance, 113
 Warthin, Dr. Aldred Scott, 760
 Warwick, C. Laurence, 665
 Washington, George, Anniversary, Activities, 35, 36
 Literature, 35
 Bicentennial, 33-36
 Commission, 34
 Biography of, 806
 World Figure, 34
 D. C. Traffic, 243
 Triangle in, 856
 Water Commerce, 246
 Division, 117
 Power, Municipal, 240
 Ontario, 240, 241
 Public Ownership, 238-241
 State, 239, 240
 Supply, 241, 242
 Construction, 24, 242
 Management, 241
 Municipal, 236, 237
 Reforestation, 241
 Treatment, 242
 U. S. Supreme Court, 241
 Transportation, 281
 Works Practice, 242
 Watertown Arsenal, 273
 Waterways and Harbors, 246-248, 280-286
 Inland, 280
 Intercoastal, 282
 New Projects, 282
 Watres Air Mail Act, 492
 Waugh, Frederick V., 418
 Wave Mechanics, 707, 708
 Ways and Means Committee, 7
 Weather Service, 695, 696
 Welded Pipe, 640
 Welding, American Bureau of, 631
 Welfare, Child, 559-561
 Welland Canal, 246
 West-End Arch Bridge, 626
 Virginia, Old Age Pensions, 533
 W. Reed, 163
 Walter, 546
 Western History, 804
 Wharton, Edith, 812
 Wheat, Alfred A., 109
 Acreage Reduction, 331
 Fly Smut of, 415
 Futures Market, 342
 Loss, 17
 Overproduction of, 396
 Papers on, 747

Price Stabilization, 17
 Short Selling of, 342
 Spring, Yield of, 406
 Value of, 405
 Winter, Production of, 405
 White House Conference, 541
 Child Labor, 580
 Hygiene, 771
 Libraries, 837
 Paper, 61
 Whitlock, Herbert P., 689
 Whitney Museum, 851
 Wickersham Commission, 15, 535, 541
 and Civil Service, 102, 103
 George W., 29, 101, 121
 Prohibition Repeal, 29
 Report, 537
 Wiggins, Albert H., 25, 45
 Committee, Report, 25
 Wilbur, Ray Lyman, 99
 Wilkins-Ellsworth Expedition, 693, 699, 702, 809
 Willard, Daniel, 22
 Wills, Banks as Trustees, 355
 Elbert V., 904
 Wilmington, Escape of Prisoners, 538
 Wilson, G. Lloyd, 325
 Woodrow, 14, 54, 102
 Winebrick Agitation, 30
 Wing, Francis H., 895
 Winslow, Samuel E., 101
 Wisconsin, Amendments Passed, 346
 Collective Bargaining, 571, 572
 Education in, 897
 Farm Prison, 536
 Government of, 124, 125
 Public Service Investigation, 234
 Utilities Legislation, 235
 Socialist Elections, 544, 573
 Unemployment in, 897
 Insurance, 584
 University of, Research, 907
 Traffic Survey, 243
 Water Power Legislation, 239
 Workmen's Compensation, 582
 Wise, Dr. Stephen S., 609
 Wittig, G. F., 248
 Wolf, Austin M., 652
 Women's Exhibit, 852
 Woodcock, Amos W. W., 15, 30
 Woodruff, Clinton Rogers, 102, 121, 131, 134, 138, 142
 Woods, Colonel Arthur, 576
 Committee on Unemployment, 576
 Hole, Oceanography, 698
 W. O., 96
 Wool, Promotion of Use of, 409
 Workmen's Compensation, 568, 569
 and Insurance, 582-584
 Legislation, 582
 Provisions, 582
 World Affairs, United States and, 44-52

INDEX

- | | | |
|---|--|---|
| <p>Court, 71-77
 Tariff Union, 64
 U. S., 49
 Disarmament Conference, 46
 War Adjusted Compensation Act, 278
 Records, 254, 255, 267
 Veterans' Act, 277
 Naturalization, 522
 Wright, J. C., 101</p> <p>YALE, Human Welfare Group, 905
 Research Scholarships, 906
 "Yellow Dog" Contracts, 566</p> | <p>Yeshiva College, 608
 Yonkers-Brooklyn Tunnel, 630
 Young, Malcolm Oakman, 805
 Owen D., 16, 24
 Plan, 24, 25, 26, 45
 Ralph A., 463</p> <p>ZEPPELIN COMPANY, International, 681
 Zinc, 447, 448
 Consumption, 447
 Mines, Operations at, 448
 Oxide, 448
 Price of, 448
 World Conditions of, 448</p> | <p>Zionists, 61
 Zirolì, Angelo, 853
 Zoning, 148-150
 Legislation, 147-148
 Ordinances, 147
 Powers of Adjustment, 148, 149
 Publications, 150
 Purposes, 149, 150
 Regulation, 149
 Shortcomings, 149, 150
 Zoology, Invertebrate, 735-741
 Vertebrate, 731-734
 Zorach, William, 852</p> |
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